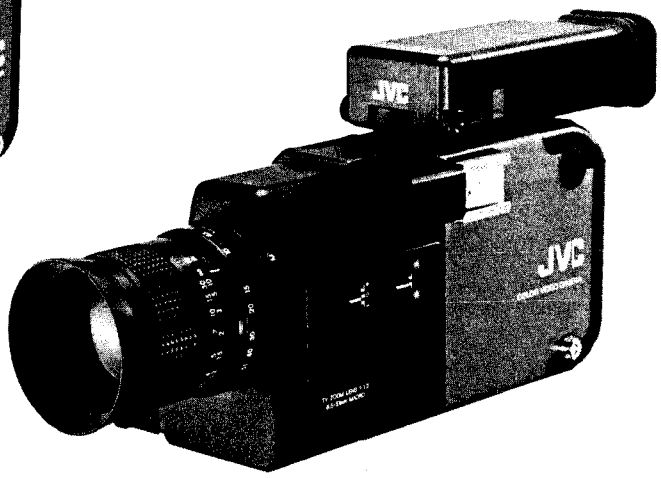
JVC

SERVICE MANUAL

COLOR VIDEO CAMERA

MODEL GX-N8U/UT GX-N6U/UT

GX-N8U/UT



GX-N6U/UT

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- INSTRUCTION SEAT
- INTRODUCTION AND REPAIR SERVICE
- ADJUSTMENT
- STANDARD CIRCUIT DIAGRAM
- PARTS LIST
- LENS SERVICE MANUAL

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No. 56
Apr. 19

PRECAUTION

Electrical components having special safety-related characteristics are identified by shading (▒▒▒) on the schematic and by (⚠) on the parts list in Service Manual. When replacing these components, be sure to use designated parts.

SPECIFICATIONS

Type	: Color Video Camera
System	: Step-energy decoding system (single tube)
Signal system	: Based on NTSC standard
Pickup tube	: 1/2″ Newvicon
Scanning	: 525 lines, 2:1 interlaced
Resolution	: 300 lines or more (horizontal) 300 lines or more (vertical)
Synchronizing system	: Internal sync
Video output	: 1 Vp-p, 75 Ω unbalanced (sync negative)
Video S/N ratio	: 45 dB or more
Audio output	: 77.5 mVrms (−20 dBs) Impedance 1 kΩ 2 channels (N8U/UT) 1 channels (N6U/UT)
Color temperature setting	: 1 Outdoor (natural light) setting (☀ : about 5,500 K) 2 Indoor (artificial light) setting (💡 : about 3,200 K) 3 White balance auto tracking settings (about 3,200 K to 5,500 K N8U/UT only)
Microphone jack	: 0.28 mVrms (−68,79 dBs) high impedance 2 channels (35 mm dia. stereo mini jack N8U/UT) 1 channel (35 mm dia. monaural mini jack N6U/UT)
Minimum illumination	: 10 lux (1 fc) (with full auto switch set to [A] excluding telephoto setting)
Illumination range	: 10—100,000 lux (1 fc—10,000 fc) (in full auto mode)
Minimum optimum illumination of subject being shot	: 500 lux (50 fc)
Viewfinder	: Electronic viewfinder (CRT. 1/2″ black-and-white)
Lens	: F=1.2, f=8.5~51 mm 6X power zoom (N8U/UT) 6X manual zoom (N6U/UT) Filter mounting screw dia. 46 mm Auto iris control Macro mechanism Auto-focus (N8U/UT only)
Zoom min. distance	: Approx. 1 meter
Macro min. distance	: Approx. 1 centimeter
Lens mount	: Special bayonet mount
Power source	: DC 12 V
Power consumption	: 6.0 W (N8U/UT) 5.7 W (N6U/UT)
Operating temperature range	: 0°C—40°C
Weight	: 1.06 kg (2.33 lbs, N8U/UT) 930 g (2.05 lbs, N6U/UT) (excluding camera cable and lens cap)
Dimensions	: 92(W)×126.5(H)×272(D)mm (3-5/8″×5″×10-3/4″, N8U/UT) 92(W)×126.5(H)×275(D)mm (3-5/8″×5″×10-13/16″, N6U/UT)
Accessories	: Stereo microphone (N8U/UT) Monaural microphone (N6U/UT) Camera cable Lens cap Lens hood EVF rubber eye cap

* *Design and specifications are subject to change without notice.*

GX-N8U/UT
GX-N6U/UT
ADJUSTMENT

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GX-N8U/UT No. 5560
GX-N6U/UT
May. 1985

MEASURING INSTRUMENTS, TOOLS AND FIXTURES FOR ADJUSTMENTS

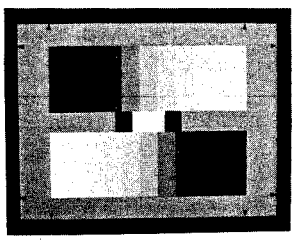
■ MEASURING INSTRUMENTS

1. **Oscilloscope** 1
2. **Color monitor TV (NTSC-type)** 1
   Color temperature: 9,300K.
3. **Lights** ..... 1 or 2
   Color temperature: 3,200K.
4. **Frequency counter** 1
5. **DIGITAL DC voltmeter (DVM)** 1
6. **Power supply** ..... one each
   1) **AC adaptor**
      CV-AC212 or CV-AC212 (S) (in USA)
      CV-AC312 or CV-AC312 (S) (in CANADA)
      CV-AC222 or CV-AC222 (S) (in CHILE)
   2) **Camera cable**
      VC-444-2E and VC-409-3 (in CHILE)
      VC-444-2E and VC-408-3 (in USA and CANADA)
7. **Vectorscope (NTSC-type)** 1
   Used only if necessary

■ TOOLS AND FIXTURES

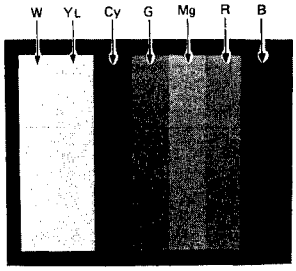
1. PATTERN **(Gray scale pattern)** **(White pattern)** **(Color bar pattern)**

(Note)
Reflection-type patterns eventually suffer from drops in signal output level or loss of output uniformity. Periodic replacement is recommended.



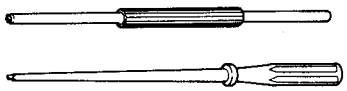
*** GS-2A**
Reflection-type ($\gamma = 2.2$)

*** WC-2A**
Reflection-type

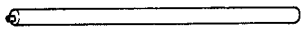


Reflection-type : **CC-2A ***
Transmission-type : **CC-2T ***

2. DRIVERS

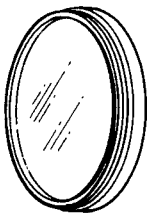


Adj. driver



Back focus adj. driver **A-7541 ***

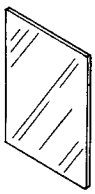
3. RED FILTER



*** R60-46S** (46ϕ)

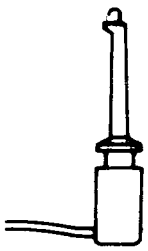
Equivalent filter using KODAK wratten No. 25 gelatin filter

4. COLOR TEMP. CONVERSION FILTER



KODAK wratten No.80B and No. 80A gelatin filter

5. PIN CLIP

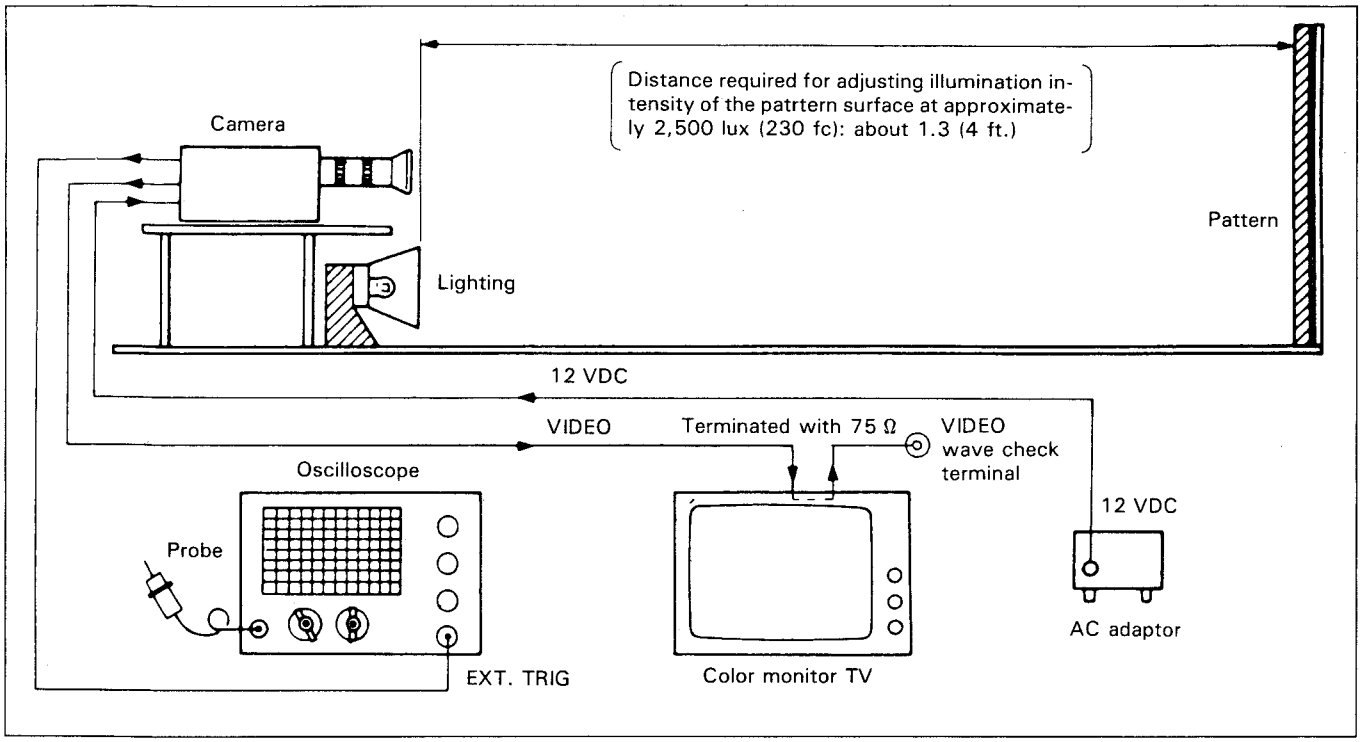


***MJ-025**

Slightly bending the pin tip facilitates its use.

(Note)
Parts marked with an asterisk (*) can be ordered from the following section:
PARTS SECTION OF THE SALES ENGINEERING DEPARTMENT, TELEVISION RECEIVER DIVISION.
Parts that is not marked with asterisk (*) are able to get at your side.

INSTRUMENT CONNECTIONS AND SETUP



PRIOR TO STARTING ADJUSTMENT

(1) AGING A NEW PICKUP TUBE

New pickup tubes must be aged (run) at least 2—3 hours to stabilize their characteristics. During aging, be sure to adjust V. HEIGHT VR of the camera so that scanning is as wide as possible. Scanning must slightly overlap the black mask portion.

After aging, readjust the camera as explained in this manual. (Some items only need to be checked.)

(2) Warming up the camera

Turn on the camera at least 10 minitues before making any adjustments.

(3) Lighting

- Adjust the distance between the light and the subject so that the illumination on the subject is about 2,500 lux.
- Make the illumination over the entire subject surface as uniform as possible.

(4) Connection to external trigger terminals of oscilloscope

The following trigger signals must be monitored separately:

- **Horizontal trigger signal**
  Q3 (blue wire) or Q4 (red wire) connector of the DEF & HV BOARD.
- **Vertical trigger signal**
  Q1 (orange wire) or Q2 (yellow wire) connector of the DEF & HV BOARD.

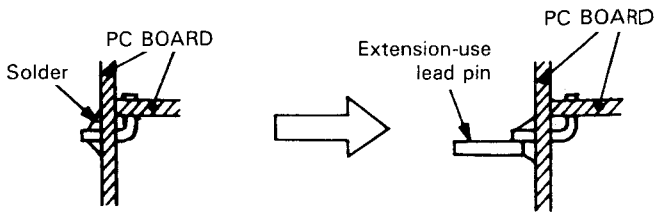
(5) Caution "High Voltage"

Some parts of this camera, carry high voltages, such as the high voltage transformer, high voltage module and EVF, exercise extreme care during adjustment.

(6) Test points

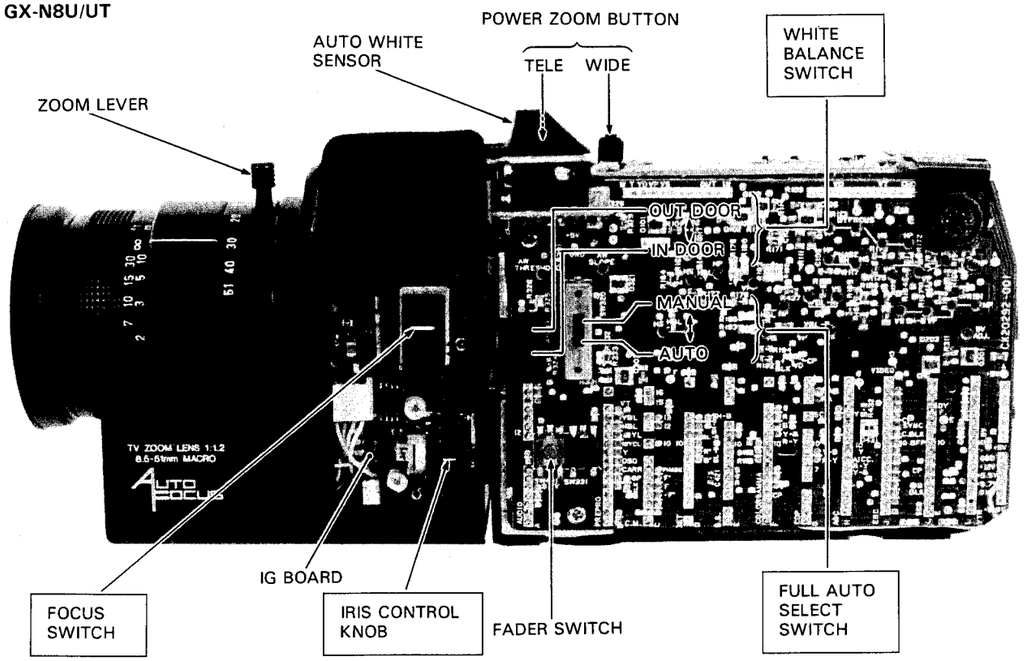
The pins of respective PC BOARD modules of this camera are used as the test points, making it very difficult to connect onto these pins. It is therefore recommended that extension-use lead pins be attached to those pins frequently used.

* (B7) (B8) (D8) (D9) (F12) (F13) (F14) (H6) (H7) and others

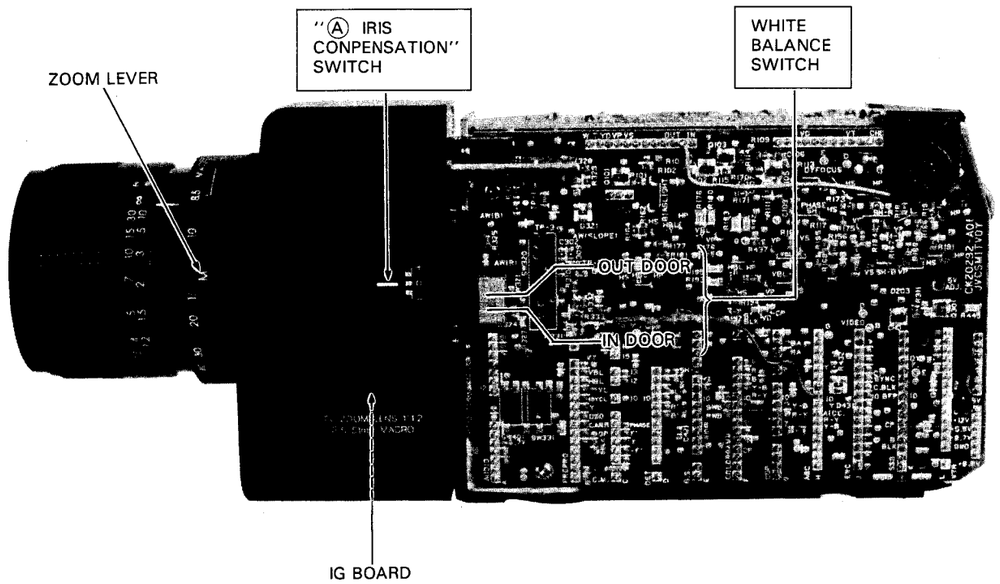


MAIN PARTS ARRANGEMENT CHART

*** GX-N8U/UT**



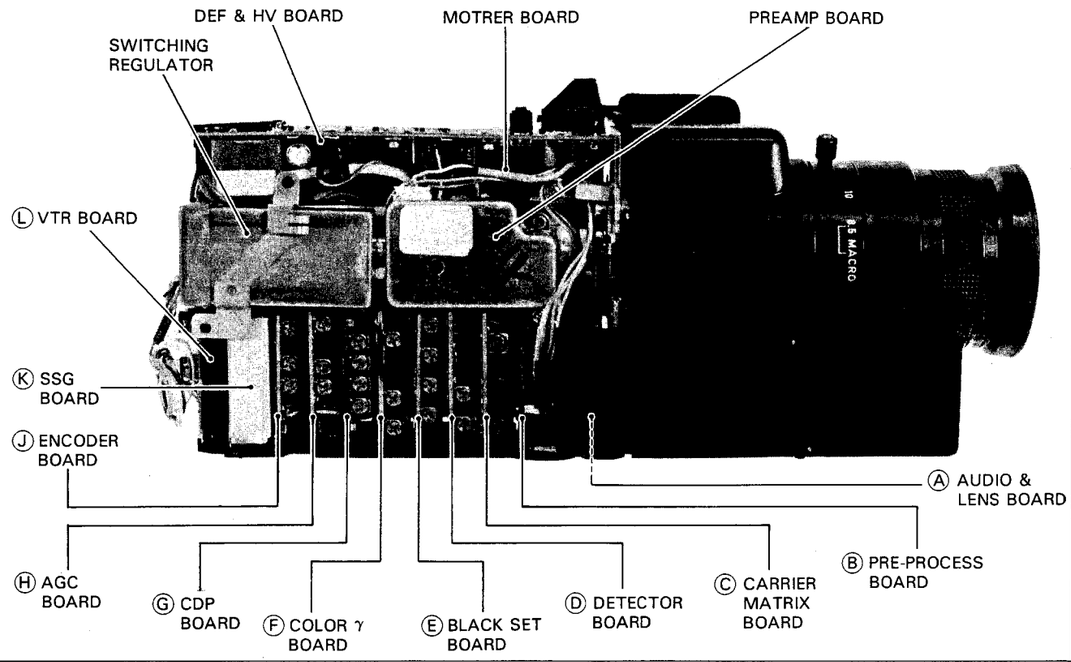
*** GX-N6U/UT**



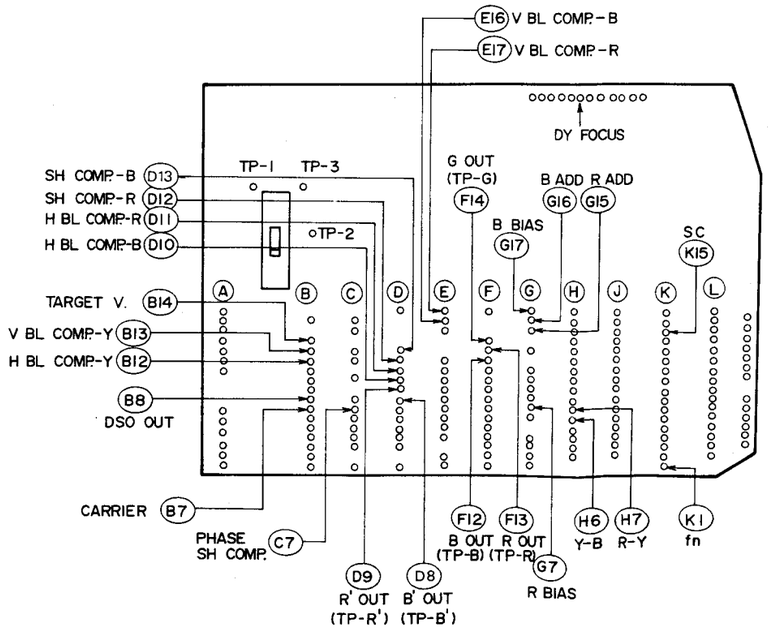
* On **GX-N6U/UT**, the functions of "FADER," "AUTO FOCUS" and "ELECTRIC ZOOM" are not provided. Also, the iris setting is made only to AUTO IRIS.

LOCATIONS OF BOARDS AND TESTPOINTS

o BOARDS LOCATIONS



o TEST POINTS LOCATIONS



Ⓐ : AUDIO & LENS BOARD
Ⓑ : PRE-PROCESS BOARD
Ⓒ : CARRIER MATRIX BOARD
Ⓓ : DETECTOR BOARD
Ⓔ : BLACK SET BOARD
Ⓕ : COLOR γ BOARD
Ⓖ : CDP BOARD
Ⓗ : AGC BOARD
Ⓙ : ENCODER BOARD
Ⓚ : SSG BOARD
Ⓛ : VTR TRIGGER, RUN & BATTERY ALARM BOARD

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GX-N8U/UT
GX-N6U/UT

ADJUSTMENT PROCEDURES

1. The adjustment procedures described in this manual are specifically for the **GX-N8U/UT**, however they can also be used for the **GX-N6U/UT**. When working on the **GX-N6U/UT**, pay careful attention to the notes on procedures specifically pertaining to it which have been added where necessary. Also note that the **GX-N6U/UT** has no **LENS IRIS CONTROL KNOB**, therefore please follow the directions for the special settings which have been included in the manual where required.

- **PRESETTING FOR GX-N8U/UT**

Before starting the adjustment procedure, preset the following switches as indicated.

1) IRIS CONTROL KNOB → "CENTER"
2) FULL AUTO SWITCH → " M " (Manual)
3) WHITE BALANCE SWITCH → " 🏠 " (In-door)
4) FOCUS SWITCH → " M " (Manual)

(Note) The AGC turns OFF when **FULL AUTO SWITCH** is set to MANUAL, and ON when the switch is set to AUTO

- **PRESETTING FOR GX-N6U/UT**

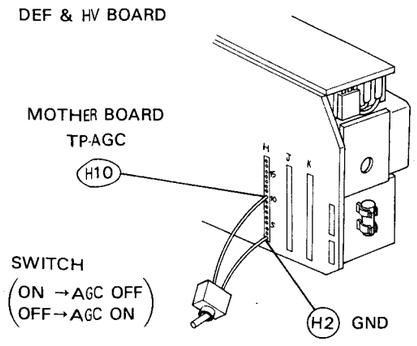
Before starting the adjustment procedure, preset the following switches as indicated.

1) "Ⓐ IRIS COMPENSATION" SWITCH → "0"
2) WHITE BALANCE SWITCH → " 🏠 " (In-door)

As the **GX-N6U/UT** only has no **AUTO IRIS**, the **AGC ON/OFF** cannot be controlled externally. Conduct the following procedures to make external **AGC ON/OFF** control possible.

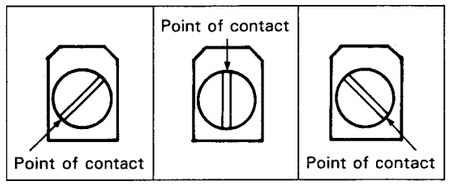
(Note) Where there is no specific instruction to do otherwise, perform all adjustments with the AGC turned ON.

1) As shown in the figure, install the switch by connecting a wire to **(H10) (TP-AGC)** and **(H2) (GND)**.
2) When the switch is turned ON, the AGC turns OFF; when the switch is turned OFF, the AGC turns ON. After completing the wire connection, confirm that the switch/AGC relationship exists.



3. Use the **Ground** on the PC board module. Grounding to the chassis frame is liable to cause distortion of the waveform.
4. **Repeat adjusting procedures** until the best condition is attained.

(Note) 1. Chip VR rotating position is designated as shown in the figure below for the convenience of explanation, since the chip VR can be rotated 360°.

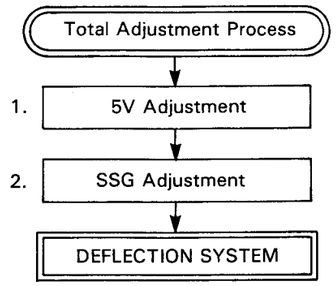


2. Never rotate VR's other than those specified by this Instruction Manual.

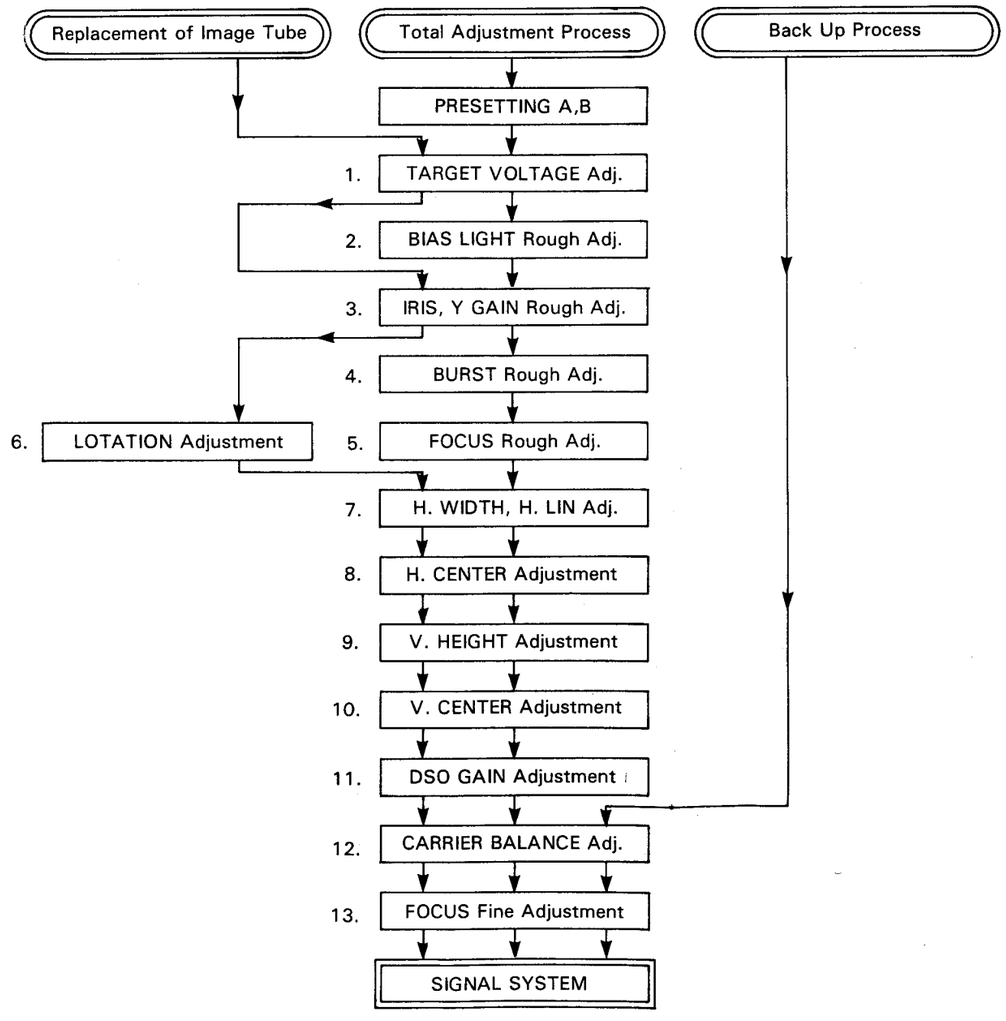
5. Unless otherwise designated, always apply **"just scan"** to all pattern adjustments.

ADJUSTING STEP

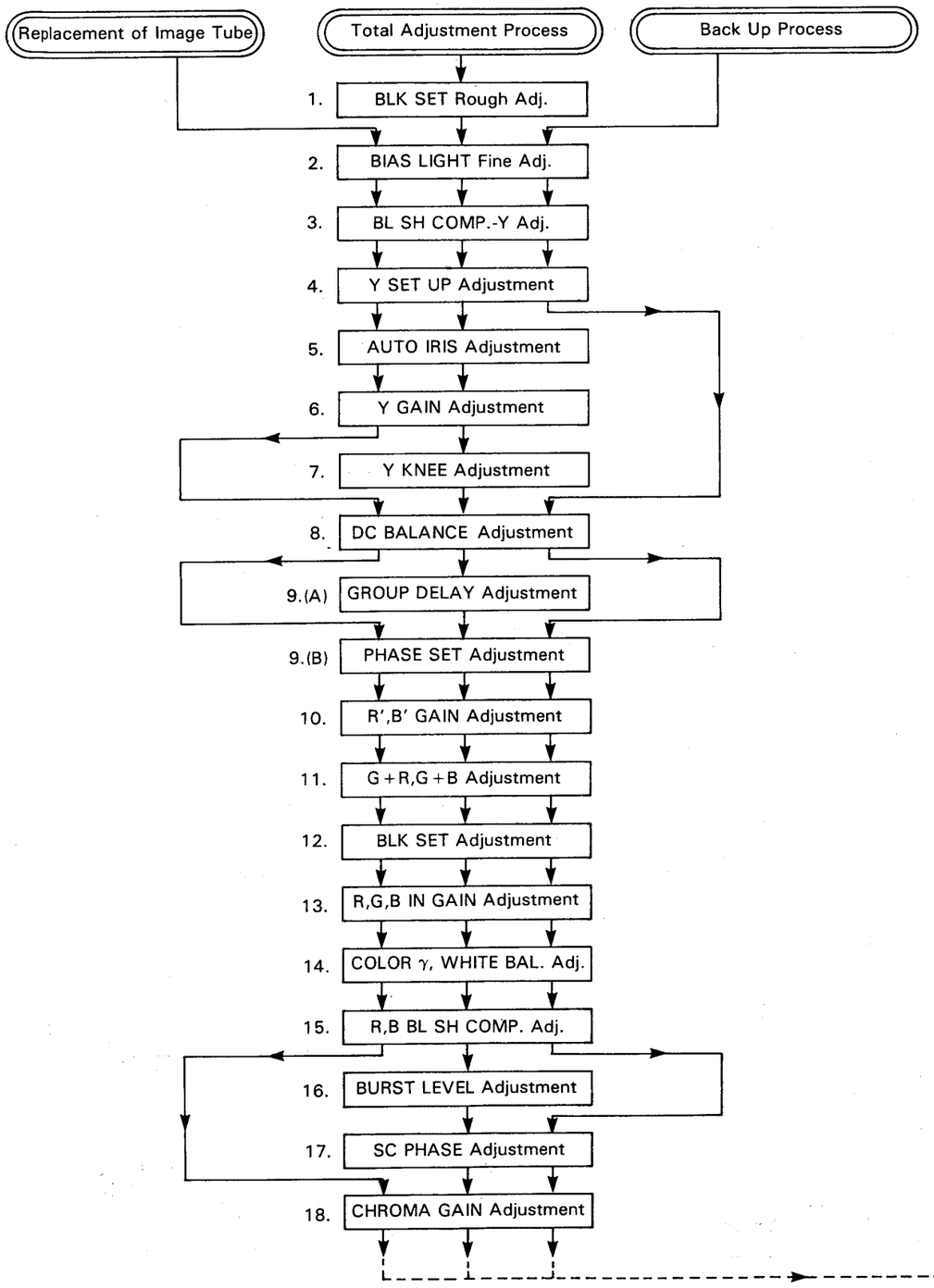
1. POWER SUPPLY and SSG Adjustment



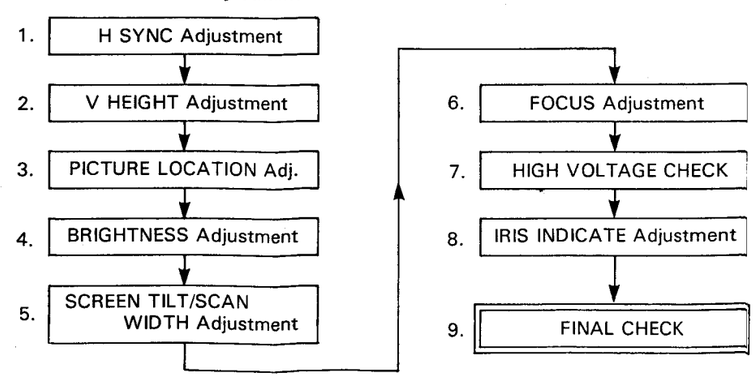
2. DEFLECTION SYSTEM Adjustment



3. SIGNAL SYSTEM Adjustment

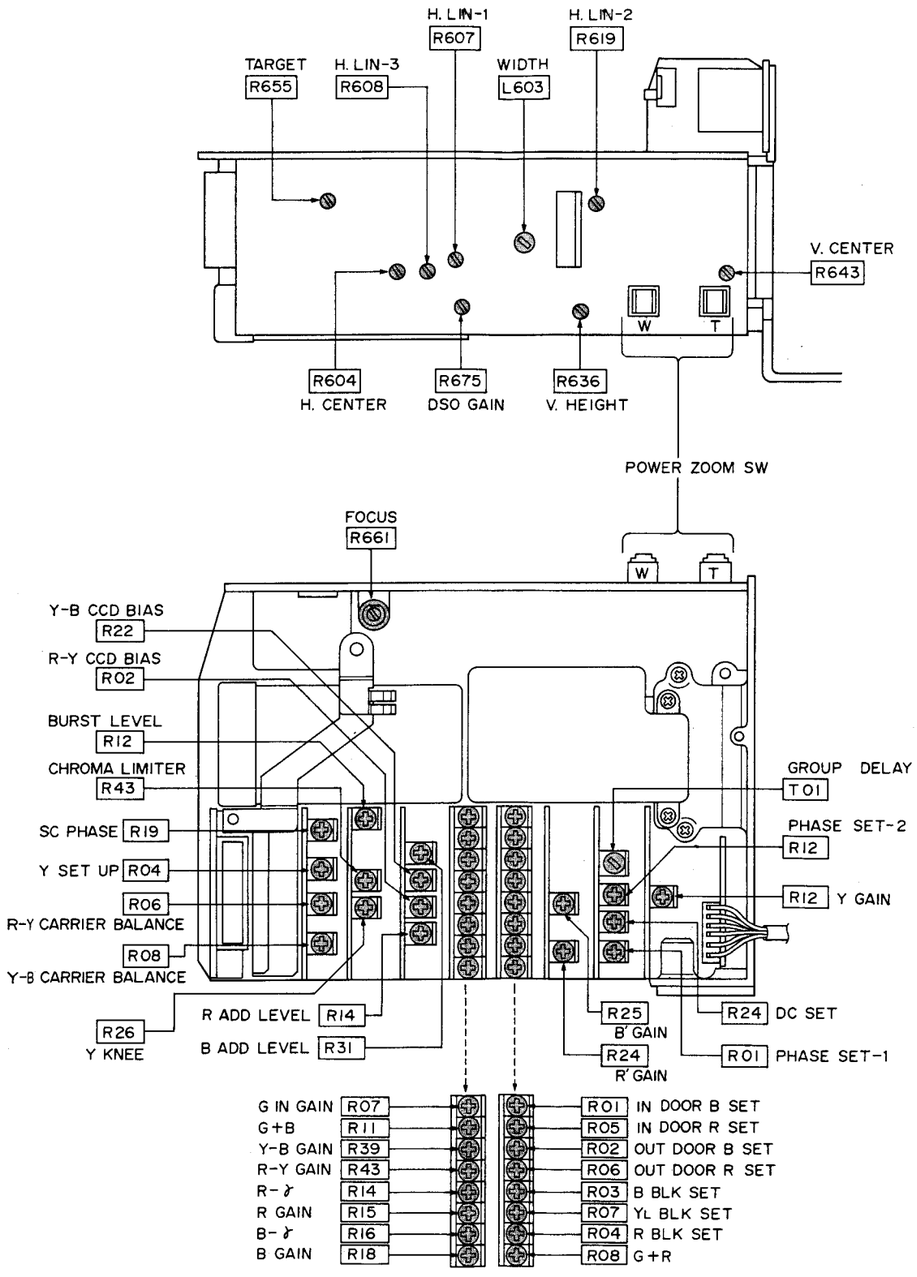

Replacement of Image Tube
Total Adjustment Process
Back Up Process
1. BLK SET Rough Adj.
2. BIAS LIGHT Fine Adj.
3. BL SH COMP.-Y Adj.
4. Y SET UP Adjustment
5. AUTO IRIS Adjustment
6. Y GAIN Adjustment
7. Y KNEE Adjustment
8. DC BALANCE Adjustment
9.(A) GROUP DELAY Adjustment
9.(B) PHASE SET Adjustment
10. R',B' GAIN Adjustment
11. G+R,G+B Adjustment
12. BLK SET Adjustment
13. R,G,B IN GAIN Adjustment
14. COLOR γ, WHITE BAL. Adj.
15. R,B BL SH COMP. Adj.
16. BURST LEVEL Adjustment
17. SC PHASE Adjustment
18. CHROMA GAIN Adjustment
19. CCD BIAS Adjustment
20. R ADD, B ADD Adjustment
21. SHADING COMP. Adj.
22. PHASE SH COMP. Adj.
23. OUT DOOR R,B GAIN Adj.
24. AUTO WHITE BALANCE Adj. (GX-N8U/UT only)
25. CHROMA LIMITER Adj.
26. BACK FOCUS Adjustment
27. AUTO FOCUS Adjustment (GX-N8U/UT only)
28. BATTERY ALARM Adj.
29. FINAL CHECK

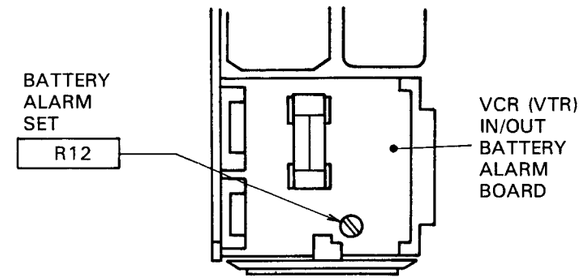
4. ELECTRONIC VIEW FINER SYSTEM Adjustment



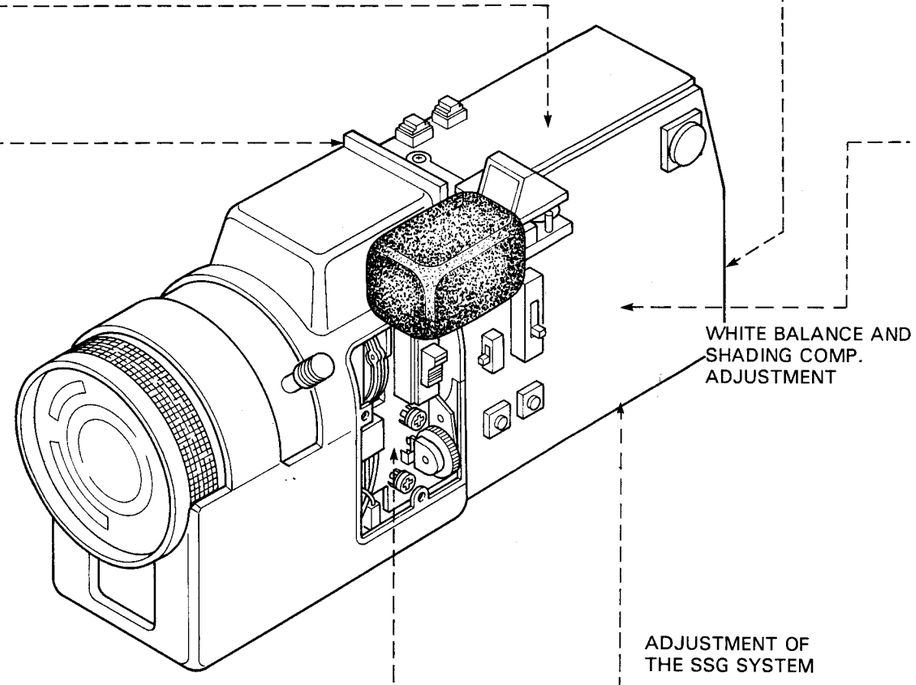
GX-N8U/UT GX-N6U/UT	GX-N8U/UT GX-N6U/UT

ADJUSTMENT LOCATIONS





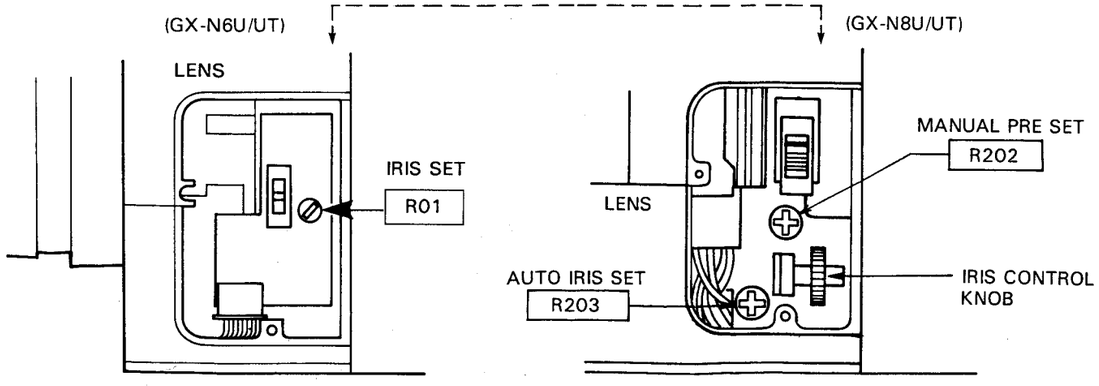
ADJUSTMENT OF THE DEFLECTION SYSTEM

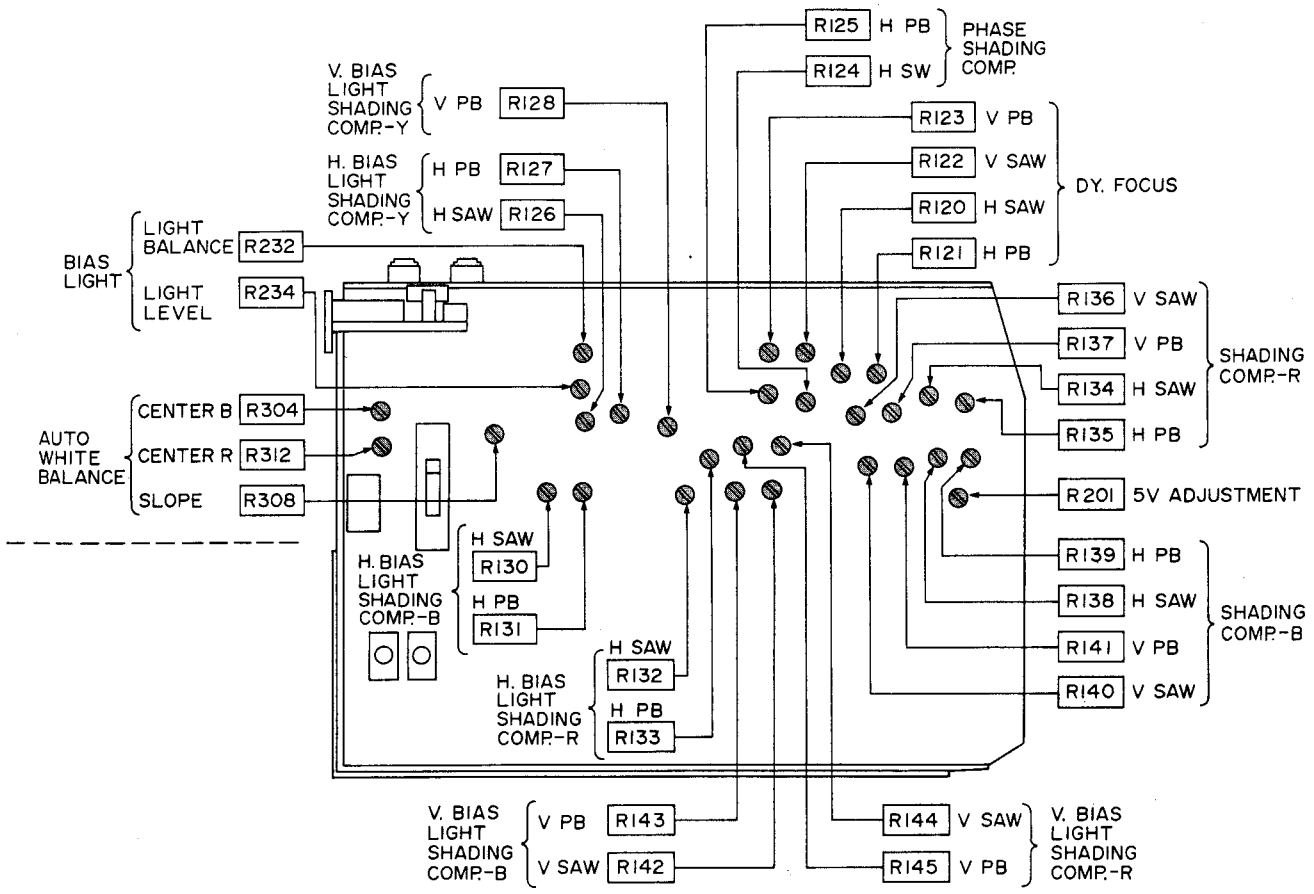


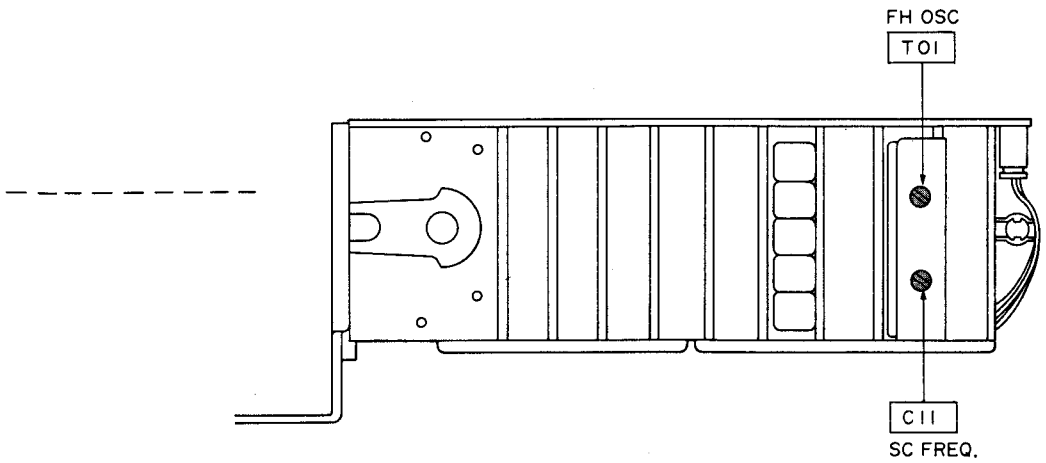
WHITE BALANCE AND SHADING COMP. ADJUSTMENT

ADJUSTMENT OF THE SIGNAL SYSTEM AND FOCUS

ADJUSTMENT OF THE SSG SYSTEM

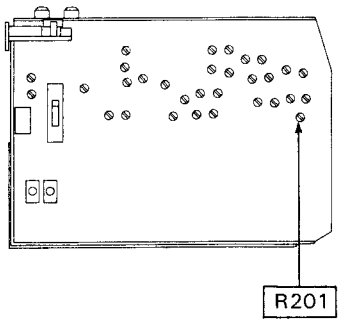
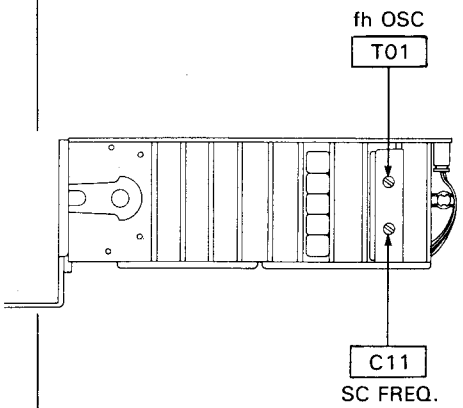



R125 H PB
R124 H SW
PHASE SHADING COMP.
V. BIAS LIGHT SHADING COMP.-Y
V PB R128
H. BIAS LIGHT SHADING COMP.-Y
H PB R127
H SAW R126
R123 V PB
R122 V SAW
R120 H SAW
R121 H PB
DY. FOCUS
BIAS LIGHT
LIGHT BALANCE R232
LIGHT LEVEL R234
R136 V SAW
R137 V PB
R134 H SAW
R135 H PB
SHADING COMP.-R
AUTO WHITE BALANCE
CENTER B R304
CENTER R R312
SLOPE R308
R201 5V ADJUSTMENT
H. BIAS LIGHT SHADING COMP.-B
H SAW R130
H PB R131
R139 H PB
R138 H SAW
R141 V PB
R140 V SAW
SHADING COMP.-B
H. BIAS LIGHT SHADING COMP.-R
H SAW R132
H PB R133
V. BIAS LIGHT SHADING COMP.-B
V PB R143
V SAW R142
R144 V SAW
R145 V PB
V. BIAS LIGHT SHADING COMP.-R


FH OSC
T01
C11
SC FREQ.

No.	Item	Measuring instrument	Test point and Adjustment part	Description

1. ADJUSTING THE POWER SUPPLY AND SSG

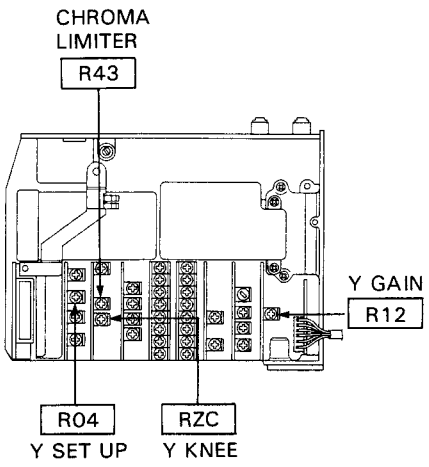
1.	**5V Adjustment**	**DVM**	(B2) **(5V LINE) R201 (5V ADJ.)** [PRE-PRO BOARD] [MOTHER BOARD]  	Set the DVM to **5.0 V±0.05 V** scale of the meter **(Note)** The DVM should be precisely adjusted. Ensure that only an accurate tester is used.
2.	**SSG Adjustment**	This adjustment is only done when repairing the SSG IC and peripherals that require adjustment. In most cases, you can go directly to step 2 "**Adjusting the Deflection system**".		
(A)	**fsc Adjustment**	**Frequency counter**	(K15) [SSG BOARD] **C11(SC FREQ.)** [SSG BOARD]	Turn the **C11 (SC FREQ.)** trimmer to obtain a frequency counter reading of of **3.579545 MHz ±5 Hz.** **(Note)** Take care not to short-circuit any of the IC terminals.
(B)	**fh Adjustment**	**DC Voltmeter**	(K1) [SSG BOARD] **T01 (fh OSC)** [SSG BOARD]  	Turn the core of the **T01 (fh OSC)** to obtain a DC voltmeter reading of **2.5 V ±0.5 V.**

No.	Item	Measuring instrument	Test point and Adjustment part	Description

2. ADJUSTING THE DEFLECTION SYSTEM

PRESETTING

A **To obtain a picture**



If a picture is not obtained, preset the following VRs as indicated.

If a picture is already obtained or fine adjustment is to be made later, presetting is not necessary.

- **PRE PROCESS BOARD**
  R12 (Y GAIN) → Mechanical center.
- **AGC BOARD**
  R26 (Y KNEE)
  → Turn fully counter clockwise.
  R43 (CHROMA LIMITER)
  → Mechanical center.
- **ENCODER BOARD**
  R04 (Y SET UP) → Mechanical center.

(Note) Set all VRs so that a picture and color are obtained.

B **SH COMP. Cancellation**

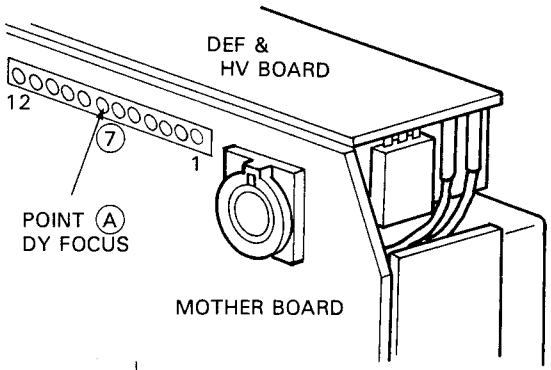
Ⓑ12 Ⓑ13 **H BL COMP-Y VRs**
[PRE PRE BOARD] **V BL COMP-Y VRs**

Ⓒ7 **PHASE SH COMP VRs**
[CM BOARD]

Ⓓ10 Ⓓ11 **H BL COMP-R VRs**
Ⓓ12 Ⓓ13 **H BL COMP-B VRs**
[DET BOARD] **SH COMP-R VRs**
SH COMP-B VRs

Ⓔ16 Ⓔ17 **V BL COMP-B VRs**
[B. SET BOARD] **V BL COMP-R VRs**

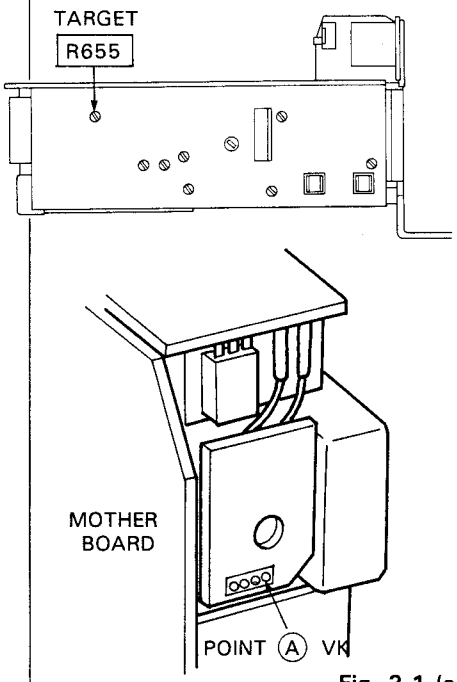
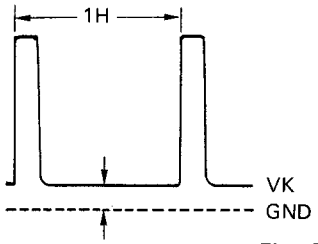
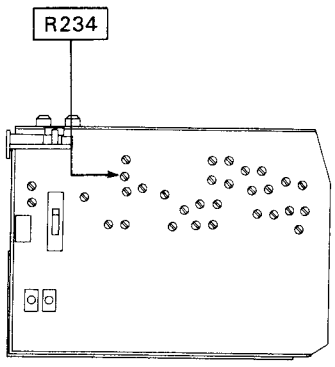
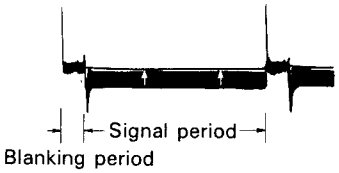
POINT Ⓐ **DY. FOCUS VRs**
[MOTHER BOARD] [MOTHER BOARD]

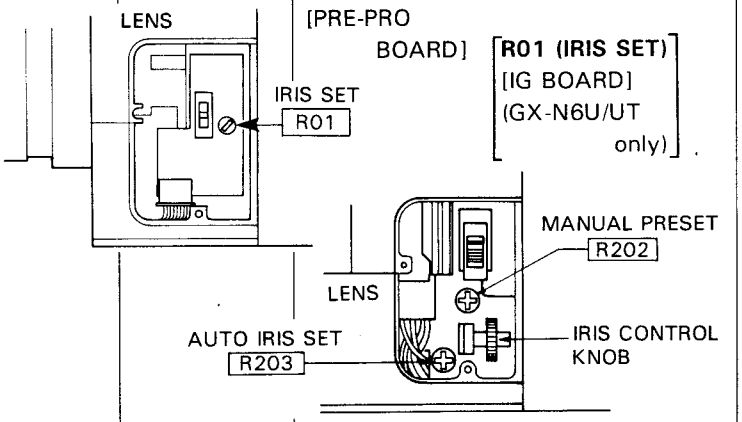
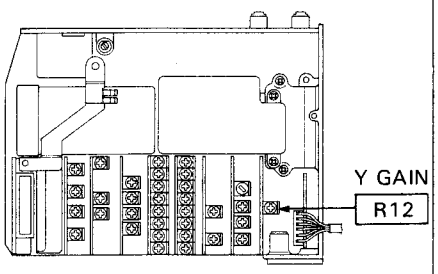
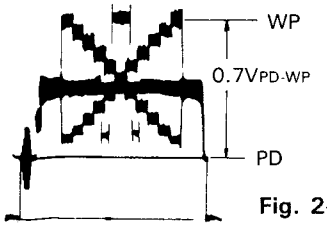
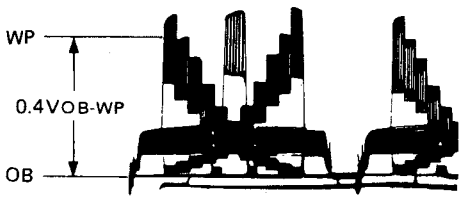
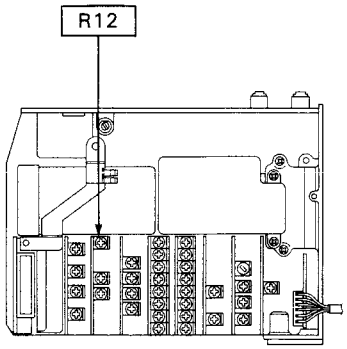
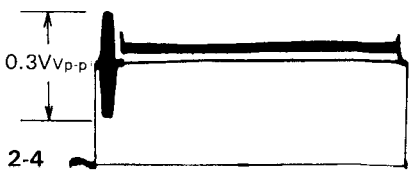


* As to each VR location, refer to the item "ADJUSTMENT LOCATIONS".

(Note) PRESETTING is not necessary when performing minute adjustments.

1. Measure Ⓑ12 at the H-rate and adjust the **H BL COMP-Y VR** to obtain flat waveforms.
2. Measure Ⓑ13 at the V-rate and adjust the **V BL COMP-Y VR** to obtain flat waveforms.
3. Measure Ⓒ7 at the H-rate and adjust the **PHASE SH COMP VR** to obtain flat waveforms.
4. Measure Ⓓ11 at the H-rate and adjust the **H BL COMP-R VR** to obtain flat waveforms.
5. Measure Ⓓ10 at the H-rate and adjust the **H BL COMP-B VR** to obtain flat waveforms.
6. Measure Ⓓ12 at the H- and V-rate, and adjust the **SH COMP-R VR** to obtain flat waveforms.
7. Measure Ⓓ13 at the H- and V-rate, and adjust the **SH COMP-B VR** to obtain flat waveforms.
8. Measure Ⓔ16 at the V-rate and adjust the **V BL COMP-B VR** to obtain flat waveforms.
9. Measure Ⓔ17 at the V-rate and adjust the **V BL COMP-R VR** to obtain flat waveforms.
10. Measure **POINT Ⓐ** at the H- and V-rate, and adjust the **DY. FOCUS VR** to obtain flat waveforms.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
1.	**TARGET VOLTAGE SETTING**	**Oscilloscope** (**H-rate 10:1**)	(B14) [PRE-PRO BOARD] **R655 (TARGET)** [DEF & HV BOARD]  **Fig. 2-1 (a)**	1. Read the voltage rating that is marked on the pickup tube. (Remove the switching regulator in order to read the voltage.) 2. Observe **point** (A) shown in **Fig. 2-1 (a)** and measure cathode voltage (VK). (Waveforms shown in **Fig. 2-1 (b)** are observable.)  **Fig. 2-1 (b)** 3. Measure (B14) and adjust **R655 (TARGET)** so that voltage becomes pickup tube voltage rating + cathode voltage (VK) = voltage at (B14).
2.	**Rough Adjustment of the BIAS LIGHT**	**Oscilloscope** (**H-rate 1:1**)	(B8) [PRE-PRO BOARD] **R234 (LIGHT LEVEL)** [MOTHER BOARD] 	o **Close the iris by lens cap.** 1. As shown in **Fig. 2-2**, adjust **R234 (LIGHT LEVEL)** so that the signal-period level matches the blanking-period level.  **Fig. 2-2**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
3.	**AUTO IRIS, Y GAIN Rough Adjustment**	**Oscilloscope** (**H-rate 10:1**)	**VIDEO OUT** **R202 (MANUAL PRE SET)** **R203 (AUTO IRIS SET)** [IG BOARD] **B8** **(DSO OUT)** [PRE-PRO BOARD] **R12 (Y GAIN)** [PRE-PRO BOARD] [**R01 (IRIS SET)** [IG BOARD] (GX-N6U/UT only)]   * **Step 1, 2 & 3 apply only to the GX-N8U/UT.**	○ **Center the LENS IRIS CONTROL KNOB** ○ **With regard to GX-N6U/UT, set the Ⓐ IRIS COMPENSATION SWITCH to 0.** 1. Set the **FULL AUTO SWITCH** to Ⓐ **(AUTO).** 2. Measure the **VIDEO OUT** and adjust **R203 (AUTO IRIS SET)** or **R01 (IRIS SET)** so the carrier becomes **0.7VPD-WD**, as shown in **Fig. 2-3 (a).**  **Fig. 2-3 (a)** **(Note)** When the WHITE BALANCE is off center, the waveform will not appear as shown in the illustration. In such cases, fade the color out by turnoing **R43 (CHROMA LIMITER)** as necessary. 3. Set the **FULL AUTO SWITCH** to Ⓜ **(MANUAL).** 4. Using the same procedure as **Step 2**, adjust **R202 (MANUAL PRESET)** so that the waveforms become **0.7VPD-WP.** 5. Measure **B8**, and as shown in **Fig. 2-3 (b)**, adjust **R12 (Y GAIN)** so that the waveforms become **0.4VOB-WP** (optical black to white peak)  **Fig. 2-3 (b)**
4.	**BURST LEVEL Rough Adjustment**	**Oscilloscope** (**H-rate 10:1**)	**VIDEO OUT** **R12 (BURST LEVEL)** [AGC BOARD] 	○ **Close the iris by lens cap.** 1. Adjust **R12 (BURST LEVEL)**, so that the burst level is **0.3Vp-p** as shown in **Fig. 2-4.**  **Fig. 2-4** **(Note)** When the **R43 (CHROMA LIMITER)** setting is off center, the waveform appearing on the oscilloscope will become distorted, making proper adjustment impossible. In such cases, preset **R43 (CHROMA LIMITER)** to a point just before the waveform becomes distorted and then make the adjustment.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
5.	**FOCUS Rough Adjustment**	**Oscilloscope** (**H-rate** / **V-rate** / **10:1**) **White pattern**	**B7 (CARRIER) R661 (FOCUS)** [PRE-PRO BOARD] **DY FOCUS VRS** (**R120 (H SAW)**, **R121 (H PB)**, **R122 (V SAW)**, **R123 (V PB)**) [MOTOR BOARD]	○ **Set the FULL AUTO SWITCH to Ⓜ .** 1. Measure **B7** at the H-rate and adjust **R661 (FOCUS)** so that the carrier is maximized and the step line becomes clearly observable, as shown in **Fig. 2-5 (a).**

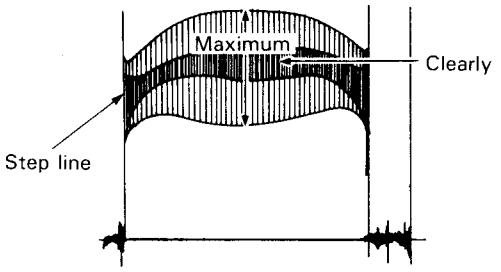


Fig. 2-5 (a)

2. Adjust **R120 (H SAW)** and **R121 (H PB)** so that the top and the bottom of the carrier becomes flat, as illustrated in **Fig. 2-5 (b).**

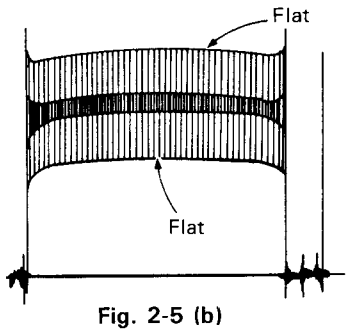


Fig. 2-5 (b)

3. Measure **B7** at the V-rate and adjust **R122 (V SAW)** and **R123 (V PB)** so that the top and bottom of the carrier becomes as flat as possible, shown in **Fig. 2-5 (c).**

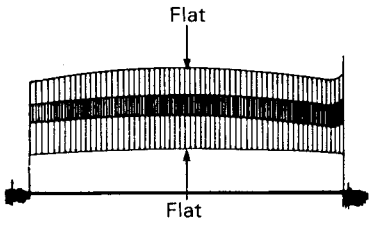
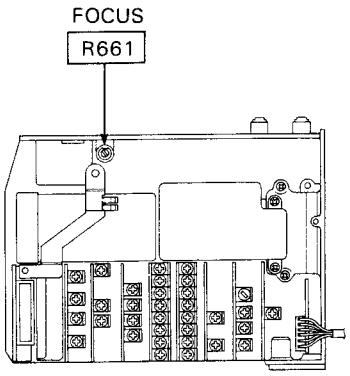
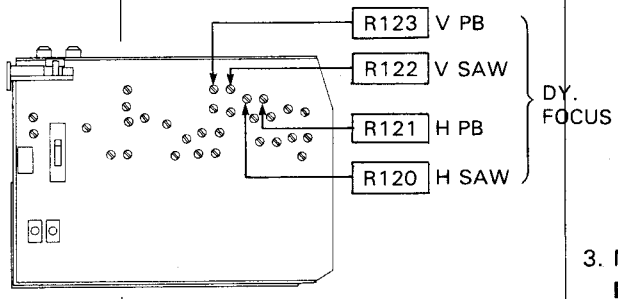


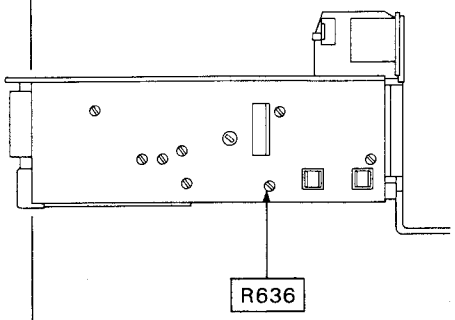
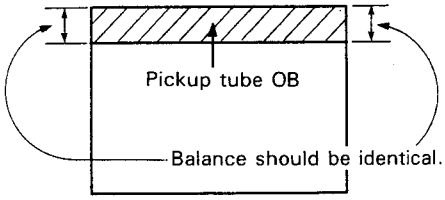
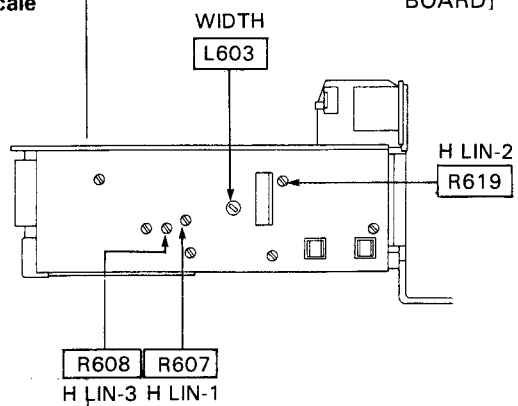
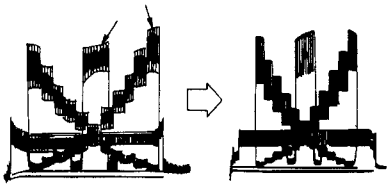
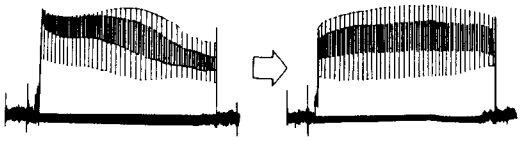
Fig. 2-5 (c)

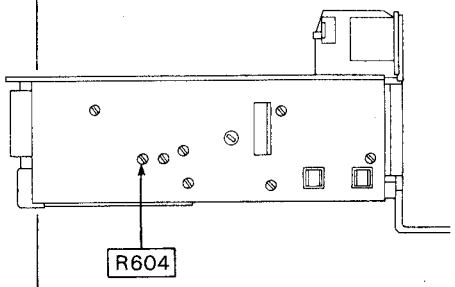
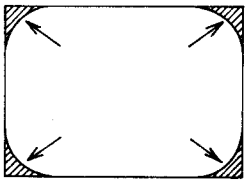
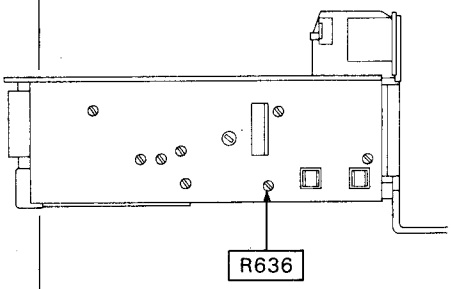
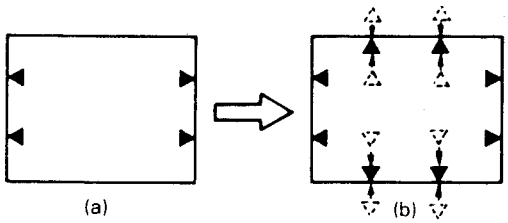
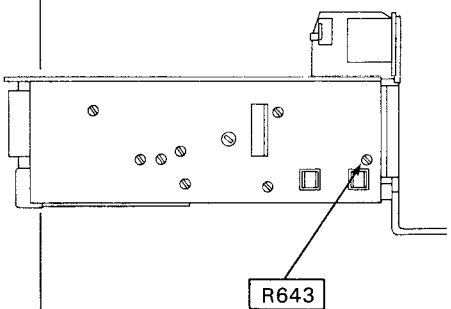
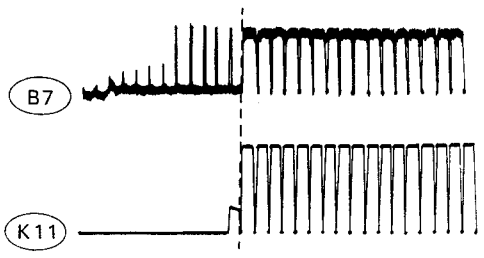
4. Repeat **steps 1 ~ 3** at both the H and the V-rate to get the carrier as uniform as possible.

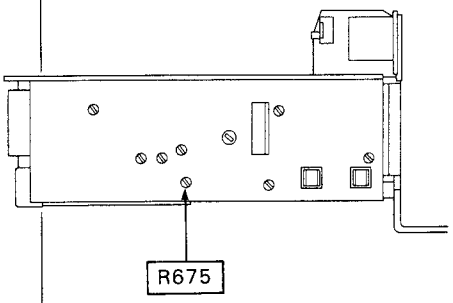
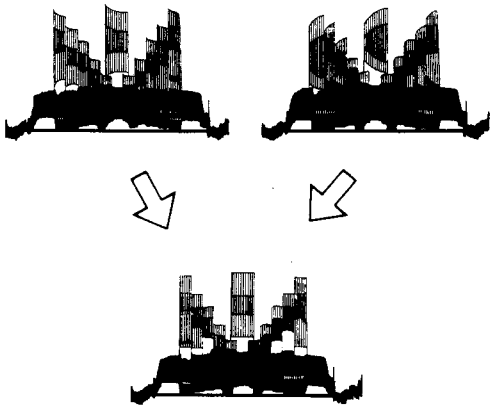
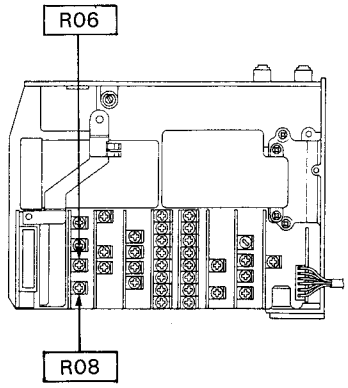
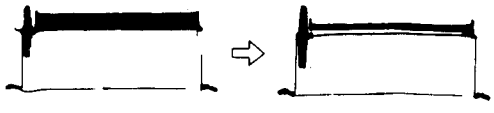
(Note) 1. If the step line does not appear, misadjustment of the **H WIDTH** is the probable cause.
2. If the step line is curved, it could be caused by misadjustment of **H LIN-1, -2, and/or -3.**



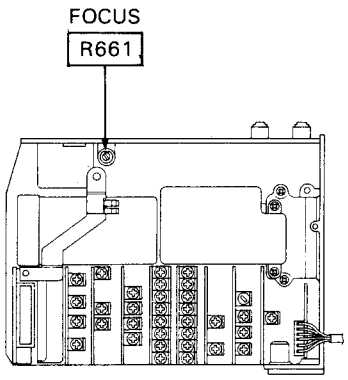


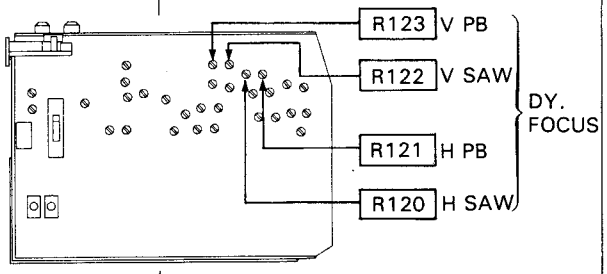
No.	Item	Measuring instrument	Test point and Adjustment part	Description
6.	**LOCATION Adjustment**	**Monitor TV (underscan type)** **White pattern**	**VIDEO OUT** **R636 (V.HEIGHT)** [DEF & HV BOARD] **TUBE**  	**(Note)** This adjustment should only be carried out if the pickup tube has been exchanged. o **Turn up the BRIGHT setting of the monitor TV (don't forget to readjust it to its normal setting when done).** 1. While observing the monitor, rotate **R636 (V HEIGHT)** until the pickup tube OB appears at the top of the screen, as shown in **Fig. 2-6.** **(Note)** Be careful not to rotate **R636** too far as doing so will cause alterations in color.  **Fig. 2-6 Monitor TV Screen** 2. If the extremities of the OB appearing at the top of the monitor screen are not balanced, loosen the fixing screw and rotate the pickup tube so that they come into balance. 3. After making the above adjustment, retighten the fixing screw and set **R636 (V.HEIGHT)** to a point immediately after the OB has disappeared from view.
7.	**H. WIDTH H. LIN Adjustment**	**Oscilloscope** (**H-rate 10:1**) **Gray scale pattern** **White pattern**	**B7 (CARRIER)** **L603 (WIDTH)** **B8 (DSO OUT)** **R607 (H. LIN-1)** [PRE-PRO BOARD] **R619 (H. LIN-2)** **R608 (H. LIN-3)** [DEF & HV BOARD]  	1. Measure **B8** by shooting a gray scale pattern. 2. Adjust **L603 (WIDTH)** so that the waveform edges become clear as shown in **Fig. 2-7 (a).**  **Fig. 2-7 (a)** 3. Measure **B7** by shooting a white pattern. 4. Adjust **R607 (H. LIN-1), R619 (H. LIN-2)** and **R608 (H. LIN-3)** so that the step line at the carrier center becomes flat as shown in **Fig. 2-7 (b).**  **Fig. 2-7 (b)**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
8.	**H. CENTER Adjustment**	**Color Monitor TV (underscan type)** **White pattern**	**VIDEO OUT** **R604 (H. CENTER)** [DEF & HV BOARD]  	1. While observing the monitor TV, adjust **R604 (H CENTER)** so that the coloring in the corners becomes equalized on the left and the right, as shown in **Fig. 2-8.**  Color Monitor TV Cunderscanning type **Fig. 2-8**
9.	**V. HEIGHT Adjustment**	**Monitor TV (underscan type)** **Gray scale pattern**	**VIDEO OUT** **R636 (V. HEIGHT)** [DEF & HV BOARD]  	○ **If an overscanning-type monitor TV is used, mark the screen in the ratio 3:4.** ○ **The camera and the pattern must be vertical.** 1. Slide the camera back and forth or perform zooming until the horizontal frame marks concide with the side limits of the monitor screen, as shown in **Fig. 2-9 (a).** 2. Adjust **R636 (V. HEIGHT)** until the vertical frame marks concide with the upper and lower limits of the monitor screen, as shown in **Fig. 2-9 (b).**  **Fig. 2-9 (a)** **Fig. 2-9 (b)**
10.	**V. CENTER Adjustment**	**Oscilloscope** (V-rate 10:1) **White pattern**	**B7 (CARRIER)** **R643 (V CENTER)** [PRE-PRO BOARD] [DEF & HV BOARD] **K11 (COMP. BLK)** [SSG BOARD]  	1. Shoot the white pattern on the full screen surface and adjust so that the pattern edges do not appear on the screen. 2. Display both **K11 (COMP. BLK)** and **B7** on the scope. Adjust **R355 (V. CENTER)** so that the start of video on **B7** coincides with the completion of **COMP. BLK.** as shown in **Fig. 2-10.**  **Fig. 2-10**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
11.	**DSO GAIN Adjustment**	**Oscilloscope** (**H-rate 10:1**) **Gray scale pattern**	(B7) **(CARRIER) R675 (DSO GAIN)** [PRE-PRO BOARD] [DEF & HV BOARD]  	○ **Center the IRIS CONTROL KNOB.** **((B8) becomes 0.4Vp-p when shooting gray scale)** 1. Measure (B7) and adjust **R675 (DSO GAIN)** so that the peaks of the waveforms are flat, as shown in **Fig. 2-11.**  **Fig. 2-11** **(Note)** As beam volume is increased, dark area tracking becomes less, therefore it is best to set [R675] immediately before the [point at which the] beam starts to show signs of becoming insufficient.
12.	**CARRIER BALANCE Adjustment**	**Oscilloscope** (**H-rate 10:1**)	**Only presettng** (F12) (TP-B) **R03 (B' BLK SET)** (F13) (TP-R) **R04 (R' BLK SET)** (F14) (TP-G) **R07 (YL BLK SET)** [GAMMA BOARD] [B SET BOAR] **VIDEO OUT R08 (Y-B CARR. BAL.)** **R06 (R-Y CARR. BAL.)** [ENC BOARD] R-Y CARR. BAL  Y-B CARR. BAL.	○ **Close the iris by lens cap** **(Note) Do not perform the following presettings when changing the pickup tube or doing a backup.** **PRESETTING** • Measure (F12) and preset **R03 (B' BLK SET)** so that all noise disappears. • Measure (F13) and preset **R04 (R' BLK SET)** so that all noise disaspears. • Measure (F14) and preset **R07 (YL BLK SET)** so that all noise disappears. 1. Measure **VIDEO OUT**, and alternately adjust **R08 (Y-B CARR. BAL.)** and **R06 (R-Y CARR. BAL.)** so that the carriers are minimized as shown in **Fig. 2-12.**  **Fig. 2-12**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
13.	**FOCUS Fine Adjustment**	**Oscilloscope** (**H-rate** / **V-rate** / **10:1**) **White pattern**	**(B7) (CARRIER) [PRE-PRO BOARD]** **Alignment magnet R661 (FOCUS)** **DY FOCUS VRs** **R120 (H. SAW)** **R121 (H PB)** **R122 (V SAW)** **R123 (V PB)** [MOTHER BOARD]	**(Note) Rotate the alignment magnet** as little as possible while conducting adjustments. 1. As shown in **Fig. 2-13 (a)**, desmount the switching regulator by removing the screw Ⓐ **(Note)** 1. Leave the connector attached. 2. Be careful that the shield case of the switching regulator does not come into contact with the circuit board. 2. Measure (B7) at the H-rate and adjust **R661 (FOCUS)** and the Alignment **magnet** so that the carrier is maximized and the step line can be clearly observed. 3. Then, adjust **R120 (H SAW)** and **R121 (H PB)** so that the carrier becomes as uniform as possible, as shown in **Fig. 2-13 (b)**.





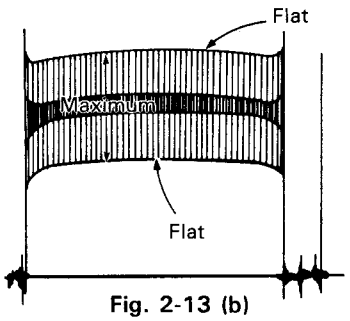


Fig. 2-13 (b)

4. Measure (B7) at the V-rate and adjust **R122 (V SAW)** and **R123 (V PB)** so that the carrier becomes as uniform as possible, as shown in **Fig. 2-13 (c)**.

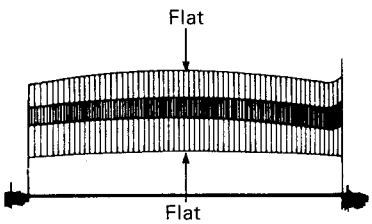
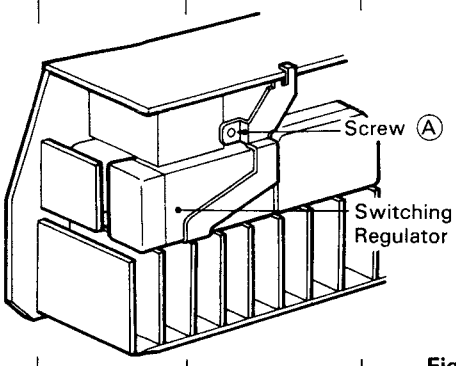


Fig. 2-13 (c)

5. Repeat above **steps 2** and **4** until shading is minimized.
   Also, if necessary, repeat **"2-7. H WIDTH/H LIN Adjustment."**



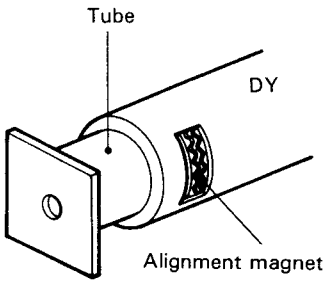
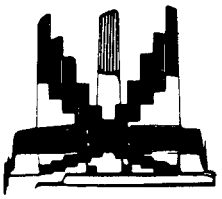
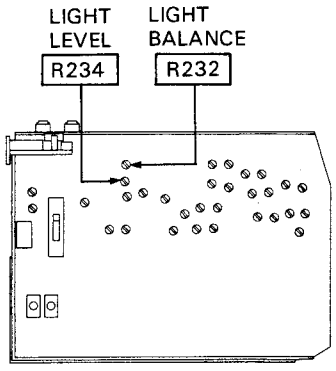
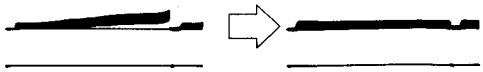
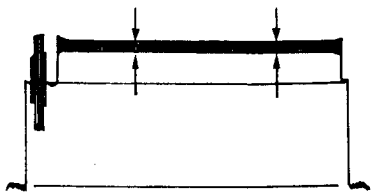


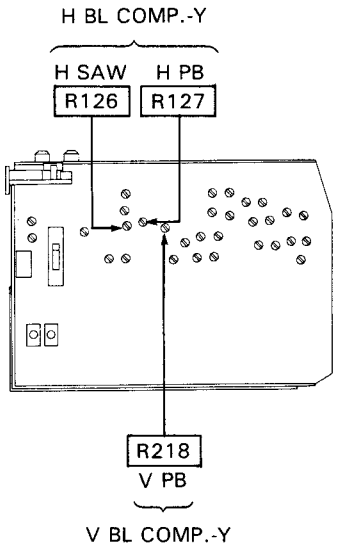
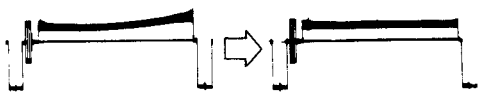
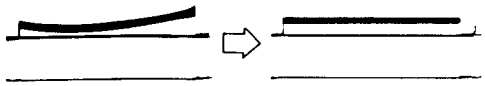
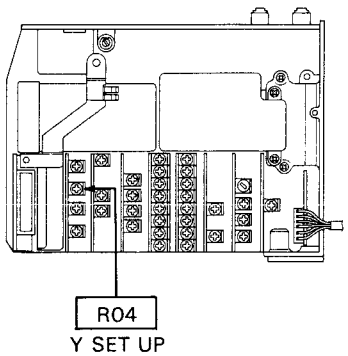
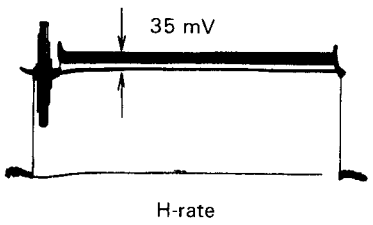
Fig. 2-13 (a)

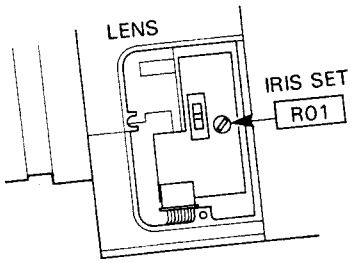
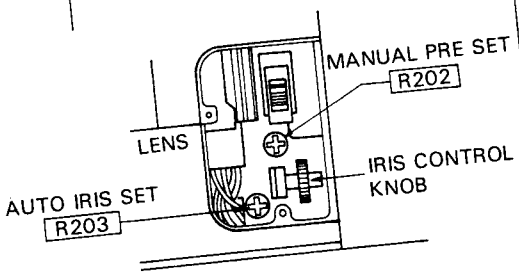
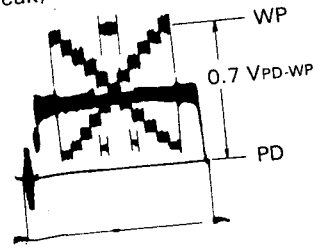
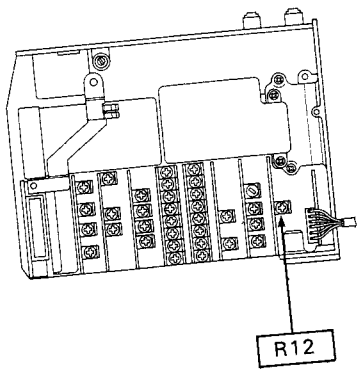
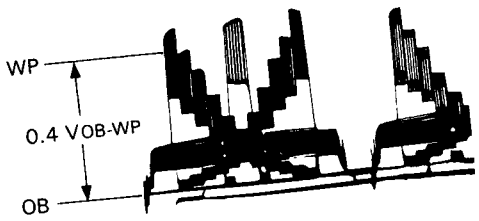
No.	Item	Measuring instrument	Test point and Adjustment part	Description

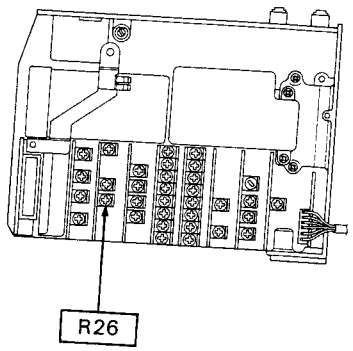
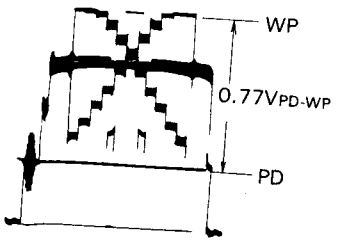
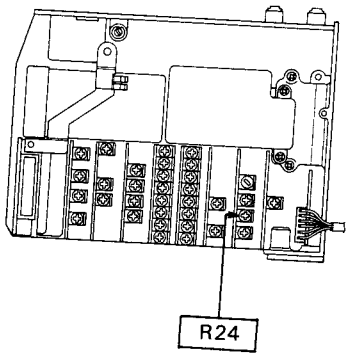
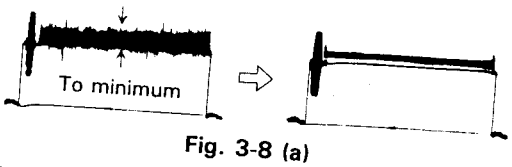
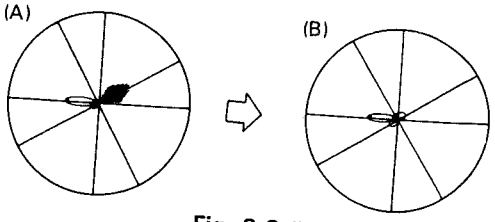
3. ADJUSTING THE SIGNAL SYSTEM

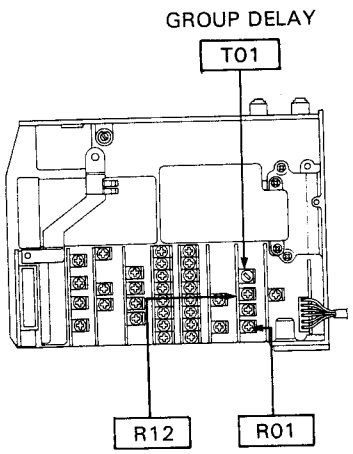
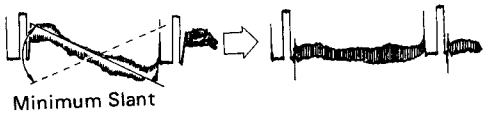
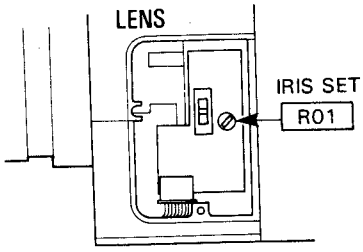
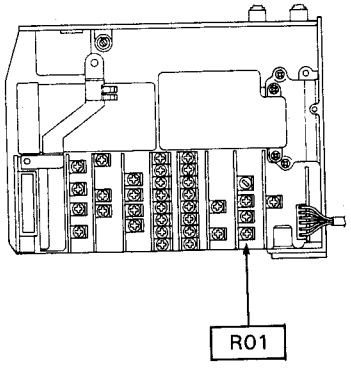
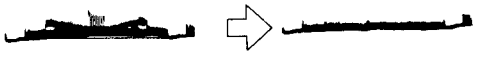
*Certain adjustments in this section require the iris setting to be checked. Be especially careful if the position or direction of the lights have been changed.
Some procedures require a black lens cap.

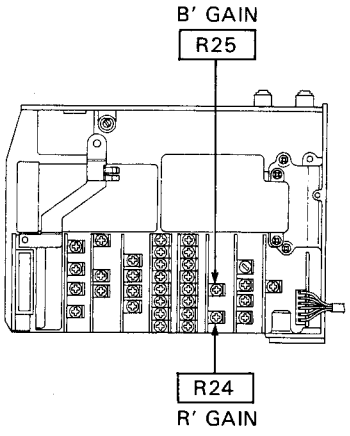
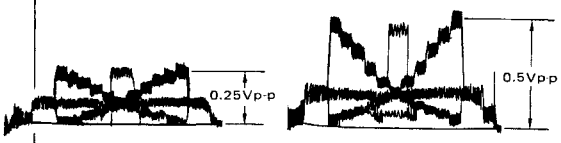
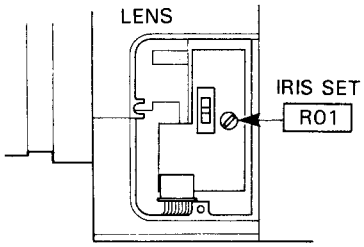
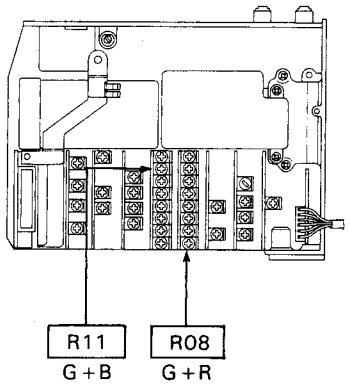
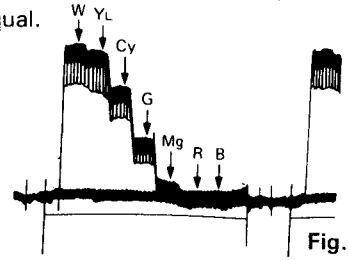
1.	**Setting of the LIGHTING POSITION and Rough Adjustment of the BLK SET**	**Oscilloscope** (**H-rate** 10:1) **Gray scale pattern**	(B8) [PRE-PRO BOARD] **Illumination lamp** (F12) **(TP-B) R03 (B' BLK SET)** (F13) **(TP-R) R04 (R' BLK SET)** (F14) **(TP-G) R07 (R_L BLK SET)** [GAMMA BOARD] [B SET BOARD]	1. Adjust the position and angle of the lamp so that the lighting becomes uniform all over the gray scale pattern.  **Fig. 3-1** 2. Make a rough adjustment of the **BLK SET** as explained in **Item 3-12.**
2.	**BIAS LIGHT Adjustment**	**Oscilloscope** (**H-rate** **V-rate** 10:1)	**VIDEO OUT** **R234 (LIGHT LEVEL)** **R232 (LIGHT BALANCE)** [MOTHER BOARD] 	○ **Close the iris by lens cap** ○ **Raise the Y SET UP level to about 100 mV (refer to Item 3-4)** **(Note)** Presetting the Y SET UP level is not necessary when exchanging the pickup tube or doing a backup. 1. Measure the **VIDEO OUT** at the V-rate and adjust **R232 (LIGHT BALANCE)** so that the waveform becomes flat.  **Fig. 3-2 (a)** 2. Measure the **VIDEO OUT** at the H-rate. 3. Conduct fine adjustment of **R234 (LIGHT LEVEL)** (to prevent the **Y SET-UP** level from varying by AGC ON/OFF operation.  **Fig. 3-2 (b)**

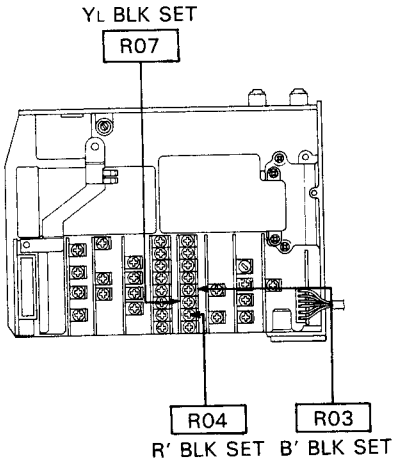
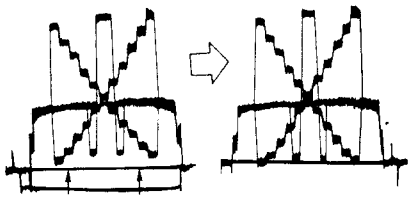
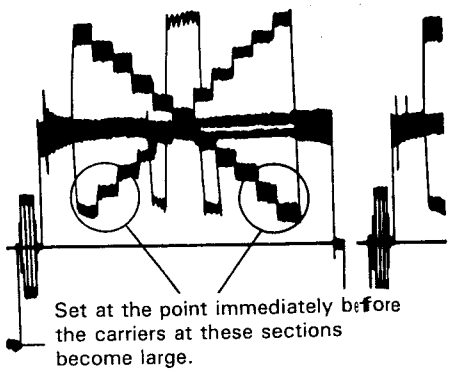
No.	Item	Measuring instrument	Test point and Adjustment part	Description
3.	**BL SH COMP.-Y. Adjustment (STATIC SHADING)**	**Oscilloscope** (**H-rate** / **V-rate** / **1:1**)	**VIDEO OUT** **H BL COMP.-Y VR** {**R127 (H PB)** / **R126 (H SAW)**} **V BL COMP.-Y VR** **R128 (V PB)** [MOTHER BOARD] 	○ **Close the iris by lens cap** 1. Measure **VIDEO OUT** at H-rate, and as shown in **Fig. 3-3 (a)**, adjust **R127 (H PB)** and **R126 (H SAW)** so that the carrier becomes flat.  **Fig. 3-3 (a)** 2. Measure **VIDEO OUT** at V-rate, and as shown in **Fig. 3-3 (b)**, adjust **R128 (V PB)** so that the carrier becomes flat.  **Fig. 3-3 (b)** 3. Measure the **VIDEO OUT**, and confirm that AUTO↔MANUAL switching of the FULL AUTO SW. (or AGC SWITCH ON/OFF) causes no Y SET UP level variation. If varied, repeat "**3-2. BIAS LIGHT Adjustment.**"
4.	**Y SET UP Adjustment**	**Oscilloscope** (**H-rate** / **10:1**)	**VIDEO OUT** **R04 (Y SET UP)** [ENC BOARD] 	○ **Close the iris by lens cap** ○ **Turn OFF the AGC** 1. As shown in **Fig. 3-4**, adjust **R04 (Y SET UP)** so that the set-up level becomes **35 mV.**  **Fig. 3-4**

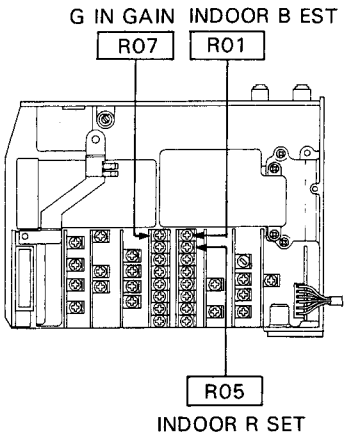
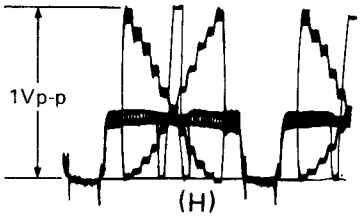
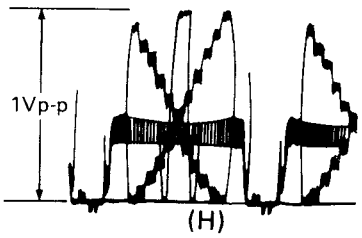
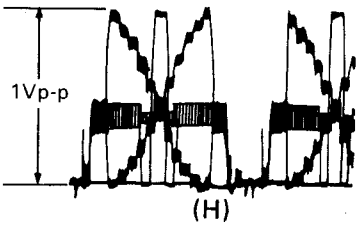
No.	Item	Measuring instrument	Test point and Adjustment part	Description
5.	AUTO IRIS Adjustment	Oscilloscope (H-rate 10:1) Gray scale pattern	VIDEO OUT R202 (MANUAL PRE SET) R203 (AUTO IRIS SET) [IG BOARD] [R01 (IRIS SET) [IG BOARD] (GX-N6U/UT Only)]   * Steps 1, 3 & 4 & 5 apply only to the GX-N8U/UT.	○ Center the LENDS IRIS CONTROL KNOB. ○ With regard to GX-N6U/UT, set the Ⓐ IRIS COMPENSATION SWITCH to 0. 1. Set the FULL AUTO SWITCH to Ⓐ (AUTO). 2. Measure the VIDEO OUT and adjust R203 (AUTO IRIS SET) or R01 (IRIS SET) so that the carrier becomes 0.7 V_{PD-WD} (pedestal-white peak) as shown in Fig. 3-5.  Fig. 3-5 (Note) When the WHITE BALANCE is off center, the waveform will not appear as shown in the illustration. In such cases, fade the color out by rotating R43 (CHROMA LIMITER). 3. Set the FULL AUTO SWITCH to the Ⓜ (MANUAL) position. 4. Using the same procedure as in step 2, adjust R202 (MANUAL PRESET) so that the carrier becomes 0.7 V_{PD-WD}. 5. Switch the FULL AUTO SWITCH alternately to Ⓐ and Ⓜ to make certain the there exists no level difference between the two.
6.	Y GAIN Adjustment	Oscilloscope (H-rate 10:1) Gray scale pattern	Ⓑ8 (DSO OUT) [PRE-PRO BOARD] VIDEO OUT R12 (Y GAIN) [PRE-PRO BOARD] 	○ Center the LENS IRIS CONTROL KNOB. 1. Measure Ⓑ8, and as shown in Fig. 3-6, adjust R12 (Y GAIN) so that the waveforms become 0.4 V_{OB-WP} (optical black-white peak)  Fig. 3-6 2. Measure the VIDEO OUT to make certain that the waveform is 0.7 V_{PD-WD} (pedestal-white peak).

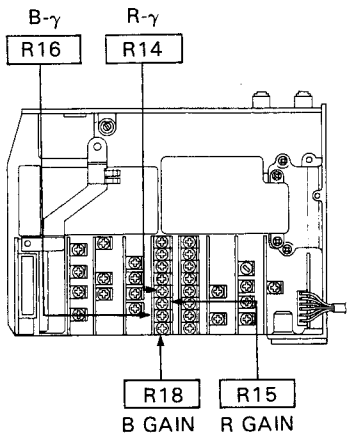
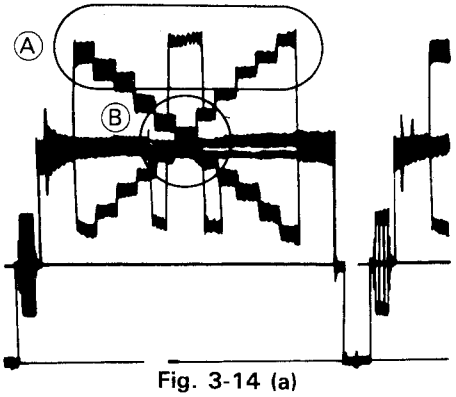
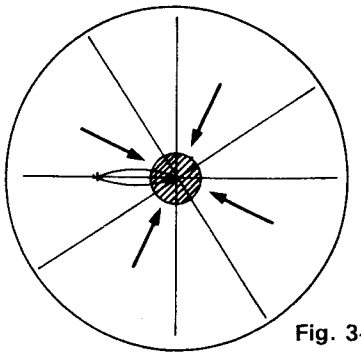
No.	Item	Measuring instrument	Test point and Adjustment part	Description
7.	**Y KNEE Adjustment**	**Oscilloscope** (**H-rate 10:1**) **Gray scale pattern**	**VIDEO OUT** **R26 (Y KNEE)** [AGC BOARD] 	○ **Preset R26 (Y KNEE) to its mechanical center.** ○ **Set the IRIS CONTROL KNOB for a value of 0.9V ~ 1VPD-WP at VIDEO OUT.** (**On the GX-N6U/UT, switch the Ⓐ IRIS COMPENSATION SWITCH to + to obtain 0.9V ~ 1VPD-WP.**) 1. Adjust **R26 (Y KNEE)** so that the waveform peaks are compressed to **0.77VPD-WP.**  **Fig. 3-7** **(Note)** When the WHITE BALANCE is off center, the waveform will not appear as shown in the illustration. In such cases, fade the color out by rotating **R43 (CHROMA LIMITER).**
8.	**DC BALANCE Adjustment**	**Oscilloscope** (**H-rate 10:1**)	**VIDEO OUT** **R24 (DC SET)** [C.M. BOARD] 	○ **Preset R43 (CHROMA LIMITER) immediately before the BURST begins to distort.** **(Note)** Not necessary when doing a backup. ○ **Close the iris by lens cap (AGC ON)** **Adjustment procedure with oscilloscope** 1. Adjust **R24 (DC SET)** to minimize the noise component of the waveform.  **Fig. 3-8 (a)**
		Vectorscope	**VIDEO OUT**	**Adjustment procedure with vectorscope** 1. Adjust **R24 (DC SET)** to minimize the blue portion of the carrier on the vectorscope.  **Fig. 3-8 (b)**

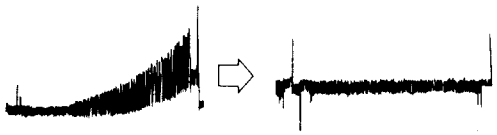
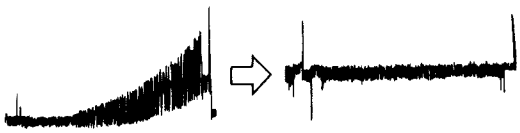
No.	Item	Measuring instrument	Test point and Adjustment part	Description
9.	PHASE SET Adjustment			
(A)	GROUP DELAY Adjustment	Oscilloscope (H-rate 10:1) White pattern	(H6) (Y-B) R01 (PHASE SET-1) (H7) (R-Y) R12 (PHASE SET-2) T01 (GROUP DELAY) [ENC BOARD] [C.M. BOARD]  	(Note) Do not perform this adjustment when changing the pickup tube or doing a backup. ○ **Set R01 (PHASE SET-1) to the mechanical center.** ○ **Set R12 (PHASE SET-2) to the mechanical center.** 1. Simultaneously measure (H6) (Y-B) and (H7) (R-Y), and use the scope ADD mode. 2. While causing **R332 (H LIN-1)** to vary by ±30°, adjust **T01 (GROUP DELAY)** and **R12 (PHASE SET-2)** so that movement of the added waveforms is minimized as shown in **Fig. 3-9.**  **Fig. 3-9 (a)**
(B)	PHASE SET Adjustment	Oscilloscope (H-rate 10:1) Gray scale pattern Red filter (R60-46S)	(D8) (TP-B') R01 (PHASE SET-1) (D9) (TP-R') [C.M. BOARD] [DET BOARD]   	○ **Turn OFF the AGC and set the (A) IRIS COMPENSATION SWITCH to —. (GX-N6U/UT Only)** ○ **Attach a red filter (R60-46S) to the lens.** ○ **Measure (D9) and set the IRIS CONTROL KNOB to obtain a values of 0.4Vp-p.** (On the GX-N6U/UT, Set R01 (IRIS SET), located within the lens, to obtain 0.4Vp-p.) 1. Measure (D8) and adjust **R01 (PHASE SET-1)** to minimize the carrier as shown in **Fig. 3-9 (b).**  **Fig. 3-9 (b)** 2. Remove the **red filter** and return the **IRIS CONTROL KNOB** to its center position. With the **GX-N6U/UT**, refer to **Item 3-5** to conduct the readjustment of the **AUTO IRIS** and return the (A) **IRIS COMPENSATION SWITH** to **0.**

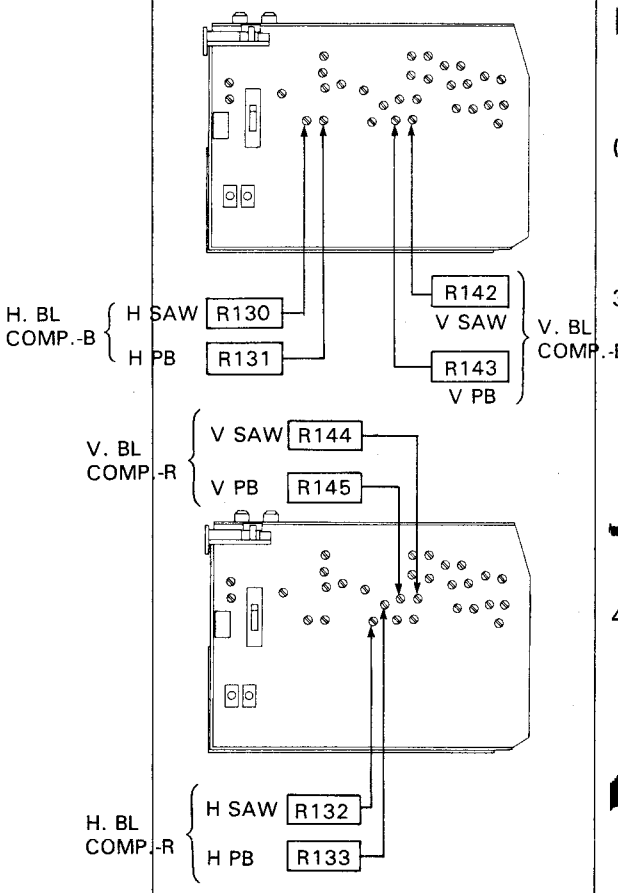
No.	Item	Measuring instrument	Test point and Adjustment part	Description
10.	**R' GAIN** **B' GAIN** **Adjustment**	**Oscilloscope** **(H-rate 10:1)** **Gray scale pattern**	**(D8) (TP-B')** **R25 (B' GAIN)** **(D9) (TP-R')** **R24 (R' GAIN)** [DET BOARD] [DET BOARD]  	○ **Begin only after AUTO IRIS adjustment has been completed.** 1. Measure **(B8)**, and as shown in **Fig. 3-10 (a)**, adjust **R25 (B' GAIN)** so that white portions become **0.25Vp-p.** 2. Measure **(D9)**, and as shown in **Fig. 3-10 (b)**, adjust **R24 (R' GAIN)** so that white portions become **0.5Vp-p.**  **Fig. 3-10 (a)** **Fig. 3-10 (b)**
11.	**G+R** **G+B** **Adjustment**	**Oscilloscope** **(H-rate 10:1)** **Gray scale pattern** **Color bar pattern** **Red filter (R60-46S)**	**(D9) (TP-R')** [DET BOARD] **(F14) (TP-G)** **R08 (G+R)** [GAMMA BOARD] [B SET BOARD] **R11 (G+B)** [GAMMA BOARD]   	○ **Turn OFF the AGC and set the (A) IRIS COMPENSATION SWITCH to −. (GX-N6U/UT Only).** ○ **Attach a red filter to the lens.** ○ **Measure (D9) (TP-R') while shooting a gray scale pattern and set the IRIS CONTROL KNOB to obtain a value of 0.4Vp-p.** **(On the GX-N6U/UT. set R01 (IRIS SET), located within the lens, to obtain 0.4Vp-p.)** 1. Shoot a gray scale pattern and measure **(F14) (TP-G).** 2. Adjust **R08 (G+R)** so that the carrier is minimized. **(Fig. 3-11 (a))** **Fig. 3-11 (a)** **(Note)** At this time, be careful that the carrier does not fall below the baseline. 3. Remove the **red filter** and return the **IRIS CONTROL KNOB** to its center setting. With the **GX-N6U/UT**, see **Item 3-5** to conduct the readjustment of the **AUTO IRIS**, and set the **(A) IRIS COMPENSATION SWITCH** to **0.** 4. Shoot a color bar pattern. Adjust **R11 (G+B)** so that **red (R)**, and **blue (B)**, levels of the color bar pattern become equal.  **Fig. 3-11 (b)**

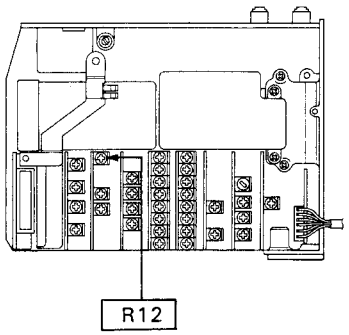
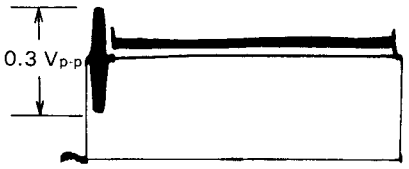
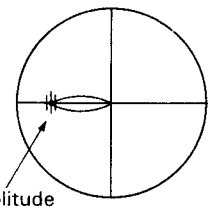
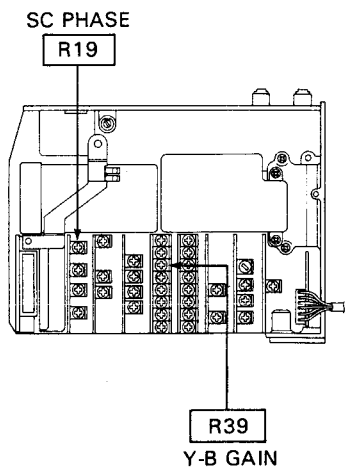
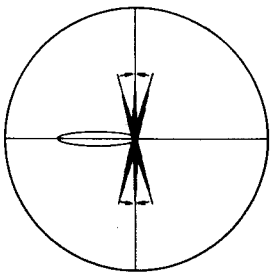
No.	Item	Measuring instrument	Test point and Adjustment part	Description
12.	BLK SET Adjustment	Oscilloscope (H-rate 10:1) Gray scale patter	(F12) (TP-B) R03 (B' BLK SET) (F13) (TP-R) R04 (R' BLK SET) (F14) (TP-G) R07 (YL BLK SET) [GAMMA BOARD] [B SET BOARD] VIDEO OUT  	○ Center the IRIS CONTROL KNOB. ○ Set the (A) IRIS COMPENSATION SWITCH to 0. (GX-N6U/UT) 1. Measure (F14) using the H-rate and adjust **R07 (YL BLK SET)** so that signals under the waveforms (remaining line of OB) as shown in **Fig. 3-12 (a)** contact the reference line.  **Fig. 3-12 (a)** **(Note)** While conducting the above adjustment, exercise care not to cause the waveform dark portions to collapse. The waveform dark portions are in an optimum state when they just contact the base line. 2. Measure **VIDEO OUT** at the H-rate, and adjust **R03 (B' BLK SET)** and **R04 (R' BLK SET)** to obtain setting at the point immediately before the carriers at the lower step section shown in **Fig. 3-12 (b)** respectively become large. **(Note)** The tracking of the carrier's center and highlight areas need not be complete.  **Fig. 3-12 (b)** 3. Observe (F12), (F13), and (F14) under the H-rate, and confirm that the dark waveform portions are not excessibely flattened out. **(Note)** When the Y SET UP level varies by turning ON/OFF the AGC switch (FULL AUTO switch), repeat step "**3-2 BIAS LIGHT Adjustment.**"

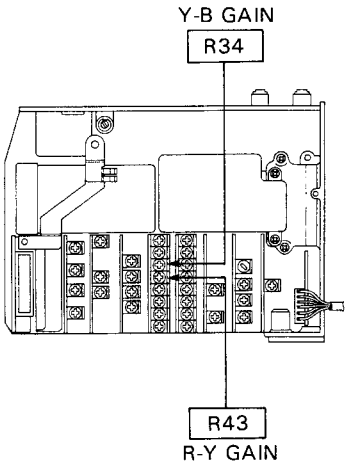
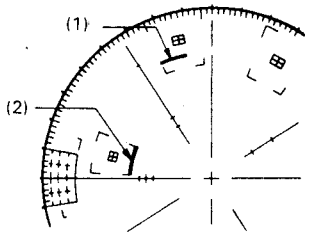
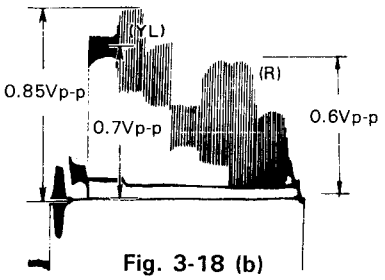
No.	Item	Measuring instrument	Test point and Adjustment part	Description
13.	**R, G, B GAIN Adjustment**	**Oscilloscope** (**H-rate 10:1**) **Gray scale pattern**	(F12) **(TP-B) R01 (INDOOR B SET)** (F13) **(TR-R) R05 (INDOOR R SET)** [B SET BOARD] (F14) **(TP-G) R07 (G IN GAIN)** [GAMMA BOARD] [GAMMA BOARD]  	o **Bein only after AUTO IRIS adjustment has been completed.** **(Note)** The WHITE BALANCE SWITCH must be set at the **"INDOOR"** position. 1. Measure (F14) and adjust **R07 (G IN GAIN)** so that the portion shown in **Fig. 3-13 (a)** becomes **1Vp-p.**  **Fig. 3-13 (a)** 2. Measure (F12) and adjust **R01 (INDOOR B SET)** so that the portion shown in **Fig. 3-13 (b)** becomes **1Vp-p.**  **Fig. 3-13 (b)** 3. Measure (F13) and adjust **R05 (INDOOR R SET)** so that the portion shown in **Fig. 3-13 (c)** becomes **1Vp-p.**  **Fig. 3-13 (c)**

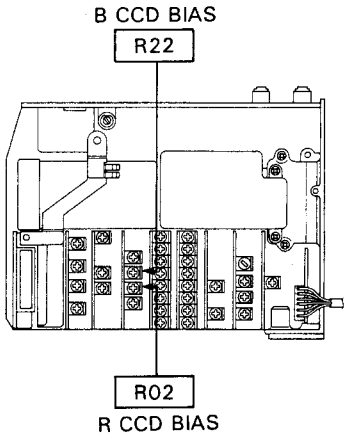
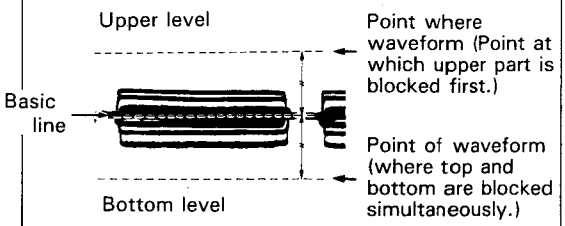
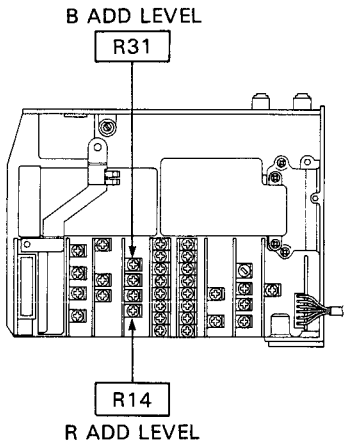
No.	Item	Measuring instrument	Test point and Adjustment part	Description
14.	COLOR γ WHITE BALANCE Adjustment	Oscilloscope (H-rate 10:1) Gray scale pattern	VIDEO OUT R15 (R GAIN) R18 (B GAIN) R14 (R-γ) R16 (B-γ) [GAMMA BOARD]  	**Adjustment procedure with oscilloscope** ○ **Begin only after AUTO IRIS adjustment has been completed.** 1. Measure the **VIDEO OUT**, and adjust **R15 (R GAIN)** and **R18 (B GAIN)** so that the carrier at section Ⓐ shown in **Fig. 3-14 (a)** is minimized.  **Fig. 3-14 (a)** 2. Adjust **R14 (R-γ)** and **R16 (B-γ)** so that the carrier at section Ⓑ shown in **Fig. 3-14 (a)** is minimized. 3. When carriers remain in the dark sections of waveforms, repeat **"3-12 BLK SET Adjustment."**
		Vectorscope Gray scale pattern	VIDEO OUT	**Adjustment procedure with vectorscope** ○ **Begin only after AUTO IRIS adjustment has been completed.** 1. As shown **Fig. 3-14 (b)**, adjust **R15 (R GAIN)**, **R18 (B GAIN)**, **R14 (R-γ)**, and **R16 (B-γ)** so that the carriers converge at the center.  **Fig. 3-14 (b)** 2. Concurrently observe the oscilloscope, and when carriers are found to be remaining in the dark sections of waveforms, repeat **"3-12 BLK SET Adjustment."**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
15.	**R, B BL SH COMP. Adjustment**	**Oscilloscope** (**H-rate** / **V-rate** / **10:1**)	(F12) (TP-B) **H BL COMP.-B VRs** { **R131 (H PB)** / **R130 (H SAW)** } **V BL COMP.-B VRs** { **R143 (V PB)** / **R142 (V SAW)** } (F13) (TP-R) **H BL COMP.-R VRs** { **R133 (H PB)** / **R132 (H SAW)** } [GAMMA BOARD] **V BL COMP.-R VRs** { **R145 (V PB)** / **R144 (V SAW)** } [MOTHER BOARD]	o **Close the Iris by lens cap (AGC ON)** 1. Measure (F12) under the H-rate. When noise elements are not flat, adjust **R131 (H PB)** and **R130 (H SAW)** to cause the elements to becomes flat.  **Fig. 3-15 (a)** 2. Measure (F12) under the V-rate. When noise elements are not flat, adjust **R143 (V PB)** and **R142 (V SAW)** to cause the elements to become flat. **Fig. 3-15 (b)** **(Note)** If the noise elements can not be determined, adjust **R03 (B' BLK SET)** on the B SET BOARD until there is noise in the output. 3. Measure (F13) under the H-rate. When noise elements are not flat, adjust **R133 (H PB)** and **R132 (H SAW)** to cause the elements to become flat.  **Fig. 3-15 (c)** 4. Measure (F13) under the V-rate. When noise elements are not flat, adjust **R145 (V PB)** and **R144 (V SAW)** to cause the elements to become flat. **Fig. 3-15 (d)** **(Note)** If the noise elements can not be determined, adjust **R04 (R' BLK SET)** on the B SET BOARD until there is noise in the output. 5. Readjust the unit according to **"3-12 BLK SET Adjustment"** and **"3-14 COLOR γ WHITE BLANCE Adjustment"**.



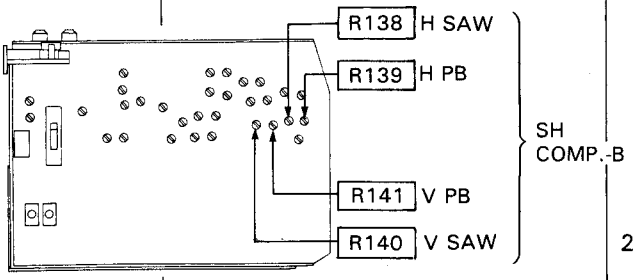
No.	Item	Measuring instrument	Test point and Adjustment part	Description
16.	**BURST LEVEL Adjustment**	Oscilloscope (H-rate 10:1)	**VIDEO OUT** **R12 (BURST LEVEL)** [AGC BOARD] 	○ **Refer back to Item 3-25 and do a rough adjustment of R43 (CHROMA LIMITER).** ○ **Close the iris by lens cap.** ○ **Turn OFF the AGC.** **Adjustment procedure with oscilloscope** 1. Adjust **R12 (BURST LEVEL)**, so that the **BURST LEVEL** is **0.3V_{p-p}** as shown in **Fig. 3-16 (a)**  **Fig. 3-16 (a)**
		Vectorscope	**VIDEO OUT**	**Adjustment procedure with vectorscope** 1. Adjust **R12 (BURST LEVEL)** so that the burst **level** drops to **75%** as shown in **Fig. 3-16 (a).**  ⓐ 75% amplitude marking for color burst vector **Fig. 3-16 (b)**
17.	**SC PAHSE Adjustment**	Vectorscope **Color bar pattern**	**VIDEO OUT** **R39 (Y-B GAIN)** [GAMMA BOARD] **R19 (SC PHASE)** [ENC BOARD] 	1. Measure the vectorscope, and preset **R39 (Y-B GAIN)** so that the (Y-B)-side output becomes "0" as shown in **Fig. 3-17.** 2. Adjust **R19 (SC PHASE)** so that the (R-Y)-side carriers coincide with the R-Y axis as shown in **Fig. 3-17.**  **Fig. 3-17** **(Note)** When a vectorscope is not avilable, observe the **monitor TV** by shooting the color bar pattern, and adjust **R19 (SC PHASE)** so that an optimum color balance is obtained. 3. After adjustment is completed, return **R39 (Y-B GAIN)** to an appropriate setting position.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
18.	**CHROMA GAIN Adjustment**	**Vectorscope** **Color bar pattern (CC-2T)**	**VIDEO OUT** **R39 (Y-B GAIN)** **R43 (R-Y GAIN)** [GAMMA BOARD] 	○ **Shoot a color bar pattern and make sure that the white section has a value of 0.7PD-WP.** 1. Adjust **R43 (R-Y GAIN)** so that the red level is positioned at **(1)**, shown in **Fig. 3-18 (a)**. Also adjust **R39 (Y-B GAIN)** so that the yellow level is positioned at **(2)**, in the same **Fig. 3-18 (a)**.  **Fig. 3-18 (a)** **(Note)** When a vectorscope is not available, conduct adjustment by the following method.
		Oscilloscope H-rate 10:1 **Color bar pattern (CC-2T)**	**VIDEO OUT**	1. Measure the **VIDEO OUT**, and adjust **R39 (Y-B GAIN)** so that the **yellow section (YL)** shown in **Fig. 3-18 (b)** becomes **0.85 V.** 2. Next, adjust **R43 (R-Y GAIN)** so that the **red section (R)** becomes **0.6 V.**  **Fig. 3-18 (b)** **(Note)** After adjustment is completed, shoot the subject and confirm that natural coloring is obtained.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
19.	**CCD BIAS Adjustment**	**Oscilloscope** (**V-rate**, **DC Mode**, **50 mV**, **10:1**) **Color bar pattern**	(G7) **(R BIAS) R02 (R CCD BIAS)** (G17) **(B BIAS) R22 (B CCD BIAS)** [CDP BOARD] [CDP BOARD]  	1 Measure (G7) at the V-rate. 2. Memorise each level when turning **R02 (R CCD BIAS)** fully to the right and left. 3. Set **R02 (R CCD BIAS)** so that the Basic line of the carrier comes to the middle of both levels obtained in **step 2**, as illustrated in **Fig. 3-19.**  **Fig. 3-19** 4. Memorise (G17) at the V-rate. 5. Memorise each level when turning **R22 (B CCD BIAS)** fully to the right and left. 6. Set **R22 (B CCD BIAS)** so that the Basic line of the carrier comes to the middle of both levels obtained, in the same manner as in **step 3.**
20.	**R ADD B ADD Adjustment**	**Oscillocope** (**H-rate**, **10:1**) **Color bar pattern**	(G15) **(R ADD) R14 (R ADD LEVEL)** (G16) **(B ADD) R31 (B ADD LEVEL)** [CDP BOARD] [CDP BOARD]  	o **Center the IRIS CONTROL KNOB.** 1. Measure (G15) and adjust **R14 (R ADD LEVEL)** so that the carrier becomes flat. 2. Measure (G16) and adjust **R31 (B ADD LEVEL)** so that the carrier becomes flat. **Fig. 3-20**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
21.	**SHADING COMP. Adjustment (R-CH)**	**Oscilloscope** (**H-rate**, **V-rate**, **10:1**) **White pattern**	(H7) **(R-Y)** [ENC BOARD] **SH COMP.-R VR** **R134 (H SAW)** **R135 (H PB)** **R136 (V SAW)** **R137 (V PB)** [MOTHER BOARD]	**Adjustment procedure with oscilloscope** o **Center the IRIS CONTROL KNOB.** 1. Measure (H7) at H-rate and adjust **R134 (H SAW)** and **R135 (H PB)** so that the waveform becomes flat.
				Fig. 3-21 (a) 2. Measure (H7) at V-rate and adjust **R136 (V SAW)** and **R137 (V PB)** so that the wave form becomes flat.
				Fig. 3-21 (b)
		Vectorscope **Gray scale pattern**	**VIDEO OUT**	**Adjustment procedure with vectorscope** o **Center the IRIS CONTORL KNOB.** 1. Alternately adjust **R134 (H SAW)**, **R135 (H PB)**, **R136 (V SAW)** and **R137 (V PB)** so that the carrier displayed on the vectorscope is positioned at center and minimized.
				Fig. 3-21 (c) **(Note)** The adjustment can be facilitated by raising the gain of the vectorscope.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
	(B-CH)	Oscilloscope (H-rate / V-rate / 10:1) White pattern	(H6) (Y-B) [ENC BOARD] SH COMP.-B VR R138 (H SAW) R139 (H PB) R140 (V SAW) R141 (V PB) [MOTHER BOARD]	**Adjustment procedure with oscilloscope** ○ **Center the IRIS CONTROL KNOB.** 1. Measure (H6) at H-rate and adjust **R138 (H SAW)** and **R139 (H PB)** so that the waveform becomes flat.
		Vectorscope Gray scale pattern	VIDEO OUT	**Adjustment procedure with vectorscope** ○ **Center the IRIS CONTROL KNOB.** 1. Alternately adjust **R138 (H SAW)**, **R139 (H PB)**, **R140 (V SAW)** and **R141 (V PB)** so that the carrier displayed on the vectorscope is positioned at center and minimized.



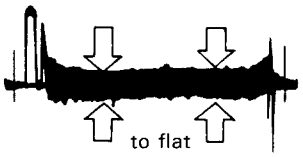


Fig. 3-21 (d)

2. Measure (H6) at V-rate and adjust **R140 (V SAW)** and **R141 (V PB)** so that the waveform becomes flat.

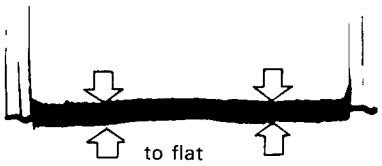


Fig. 3-21 (e)

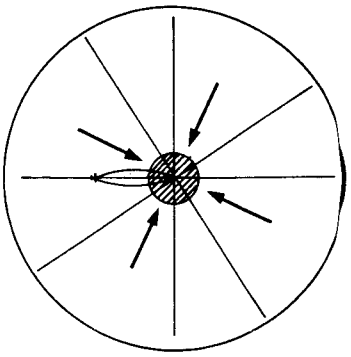
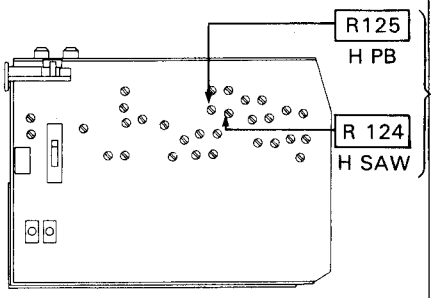
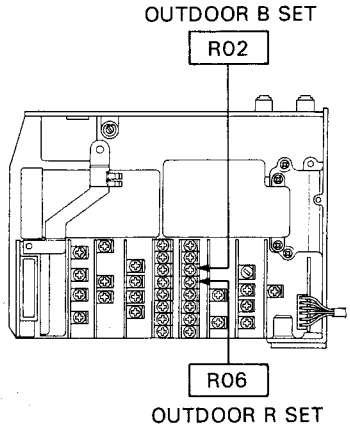
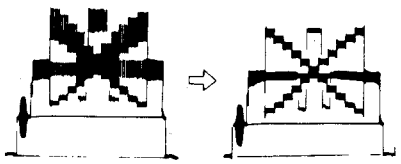
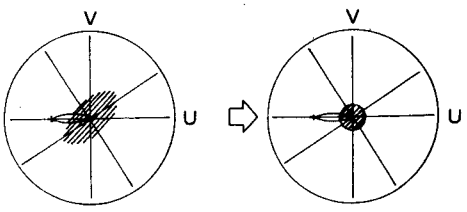
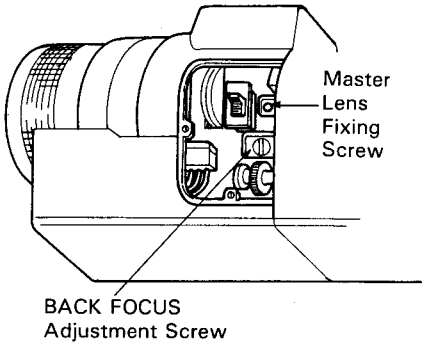
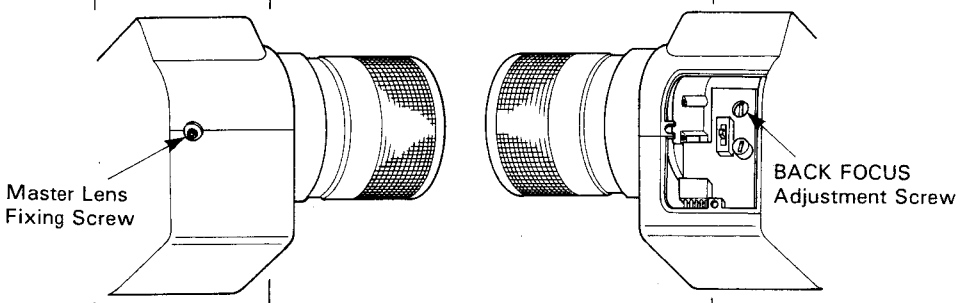
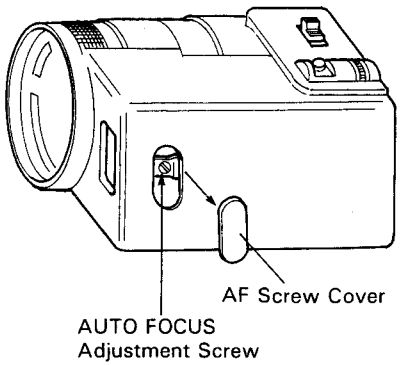


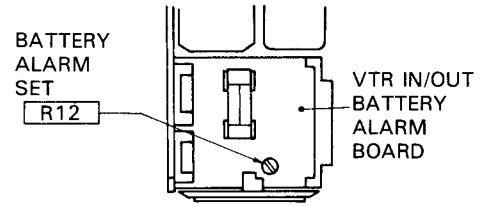
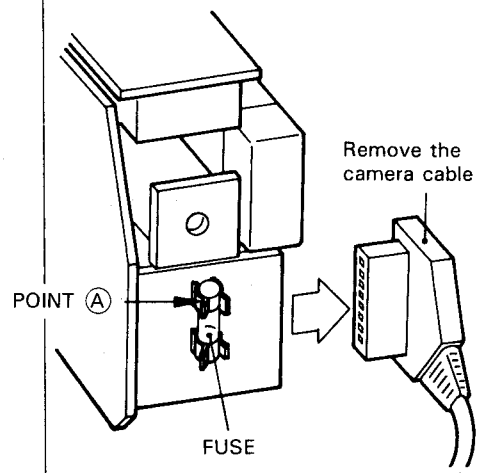
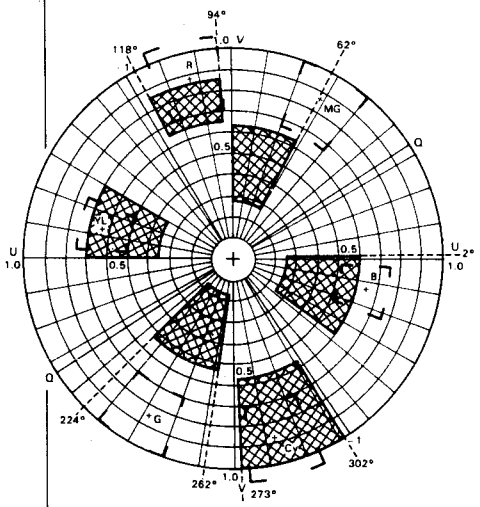
Fig. 3-21 (f)

(Note) The adjustment can be facilitated by raising the gain of the vectorscope.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
22.	**PHASE SH COMP. Adjustment**	**Monitor TV** **Skin-colored subject or orange-colored subject (JVC ORANGE color is prefered.)**	**VIDEO OUT** **PHASE SH COMP. VR** **{R124 (H SAW)** **R125 (H PB)** [MOTHER BOARD]  	o **Center the IRIS CONTROL KNOB.** 1. Observe the **Monitor TV screen** while shooting at a skin-colored subject or an orange-colored subject, and adjust **R124 (H SAW)** and **R125 (H PB)** so that the entire screen becomes uniformly orange.
23.	**OUTDOOR R.B. GAIN Adjustment**	**Oscilloscope (H-rate 10:1)** **Gray scale pattern** **80B C.C. filter**	**VIDEO OUT** **R02 (OUTDOOR B SET)** **R06 (OUTDOOR R SET)** [B SET BOARD]  	**Adjustment procedure with oscilloscope** o **Center the IRIS CONTROL KNOB.** 1. Mount a **80B C.C. filter** on the lens and set the WHITE BLANCE SWITCH to **"OUT-DOOR"**. 2. Alternately adjust **R02 (OUTDOOR B SET)** and **R06 (OUTDOOR R SET)** to minimize the carrier of the waveform.  **Fig. 3-23 (a)**
		Vectorscope **Gray scale pattern**	**VIDEO OUT**	**Adjustment procedure with vectorscope** o **Center the IRIS CONTROL KNOB.** 1. Mount a **80B C.C. filter** on the lens and set the WHITE BALANCE SWITCH to **"OUT-DOOR"**. 2. Alternately adjust **R02 (OUTDOOR B SET)** and **R06 (OUTDOOR R SET)** so that the carrier displayed on the vectorscope is positioned at center and minimized.  **Fig. 3-23 (b)**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
24.	**AUTO WHITE BALANCE Adjustment** **(GXN8U/ UT Only)**	**Dual trace Oscilloscope** **(DC Mode 50μsec 50 mV 10:1)** **80A C.C.filter**	**TP-1** **R308 (SLOPE)** **(SENSOR OUT)** **R312 (CENTER R)** **TP-2** **R304 (CENTER B)** **(R COMPARAT** [MOTHER BOARD] **SIGNAL)** **TP-3** **(B COMPRAT SIGNAL)** [MOTHER BOARD] TP-1 TP-3 TP-2 CENTER B R304 CENTER R R312 R305 SLOPE	1. Set the **FULL AUTO SWITCH** to Ⓐ **(AUTO)** 2. Observe the **TP-1** under a light source of 3200°K and memorise that level. 3. Observe the **TP-1** under a light source of Fluorescent lamp (white) and memorise that level. 4. Adjust 80A C.C. filter to the AUTO WHITE SENSOR and memorise the level of TP-1. 5. Adjust with **R308 (SLOPE)**, **R312 (CENTER R)** and **R304 (CENTER B)** so that **TP-2** and **TP-3** obtains the relationship illustrated in **Fig. 3-24.** A:B = 2:3 TP-1 — 3200°K TP-2 — A / B TP-1 — Fluorescent lamp (white) 10% TP-3 — 100% 3200°K + 80A TP-1 **(Note)** 1. The sizes of the waveforms for **R308 (SLOPE)**→TP-2 and TP-3 vary simultaneously. 2. The position of the waveform for **R312 (CENTER R)**→TP-22 varies. 3. The position of the waveform for **R304 (CENTER B)**→TP-32 varies. 4. The level at **step 3** may vary depending of the kind of fluorescent lamp (white).
25.	**CHROMA LIMITER Adjustment**	**Oscilloscope** **(H-rate 10:1)** **Color bar pattern**	**VIDEO OUT** **R43 (CHROMA LIMITER)** [AGC BOARD] LENS IRIS SET R01 R43	○ **Set this iris so that the Y level of Yellow becomes 0.7V at VIDEO OUT (Setting is facilitated by preventing the color from appearing through turning R43).** **(On GX-N6U/UT set R01 (IRIS SET); after adjustment is completed, readjust the AUTO IRIS.)** 1. **Adjust R43 (CHROMA LIMITER)** to a point just before the yellow carrier becomes compressed, as shown in **Fig. 3-25.** (YL) Same level 0.7V **Fig. 3-25**

No.	Item	Measuring instrument	Test point and Adjustment part	Description
26.	**BACK FOCUS Adjustment**	**Monitor TV** **Siemens chart**	**VIDEO OUT** **Back Focus Adjustment Screw** • **GX-N8U/UT**  **Fig. 3-26 (a)** • **GX-N6U/UT**  **Fig. 3-26 (b)**	○ **Open the iris in a dark location.** 1. Place the **Siemens chart** at least 3 m from the camera. (The chart should be placed as far away as possible.) 2. Adjust the focus to the chart in the TELE position and confirm that the focus is not disturbed when the camera is set to the WIDE position. 3. If the focus is disturbed, loosen the **Master Lens Fixing Screw** and then adjust the **Back Focus with the back focus adjustment tool** until correct focus is established. 4. Repeat **step 3 and 4** as necessary to obtain optimum focus.
27.	**AUTO FOCUS Adjustment (GX-N8U/UT only)**	**Monitor TV** **Siemens chart**	**VIDEO OUT** **AUTO FOCUS ADJ. Screw**  **Fig. 3-27**	○ **Open the iris in a dark location.** 1. Detach the screw cover shown in **Fig. 3-27.** 2. Place the **Siemens chart 2 m** distant from the lens and shoot this chart after turning the ZOOM RING fully to the TELE side. 3. Set the **FOCUS SWITCH** to **"AUTO"**. 4. Rotate the FOCUS RING to the near end/far end to cause AUTO FOCUS operation, and confirm that optimum focus is obtained. 5. If the focus is disturbed, rotate the **AUTO FOCUS ADJ. SCREW** while keeping the **FOCUS SWITCH** set at **"AUTO"**, and by adjusting this screw, obtain optimum focus. 6. After adjustmetn is completed, reinstall the screw cover. **(Note)** Under adjustment in this section, only the measuring distance can be adjusted. As to adjustment of the infrared-ray spot, refer to the lens section 5 of service manual.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
28.	**BATTERY ALARM Adjustment**	**DC Power supply, DVM**	**R LED in EVF R12 (ALARM SET)**   **Fig. 3-28**	o **Disconnect the camera cable.** 1. Connect a DC power supply and DC voltmeter to **Point Ⓐ** shown in the chart on the left, and apply exactly **10.8 VDC.** 2. Adjust **R12 (ALARM SET)** to the point where **LED (R)** in the electronic viewfinder just stops flickering and goes out.
29.	**FINAL CHECK**	**Vectorscope** **Oscilloscope** **Color bar pattern, (CC-2T)** **Gray scale pattern & Others**	**VIDEO OUT**  **Fig. 3-29**	1. Shoot the color bar pattern in the Auto Iris mode and display the result on a vectorscope. Confirm that the respective color carriers are at the locations indicated in the Fig. 3-29. 2. Check the operation of Iris Compensation as well as all other switches and functions. 3. Shoot the gray scale pattern and check γ, White Balance, Carrier Balance, Y SET UP etc. at VIDEO OUT. 4. Shoot an appropriate subject and check colors, camera functions etc. 5. If check results are unsatisfactory, repeat the backup process.

4. ADJUSTMENT OF THE ELECTRONIC VIEWFINDER

- **Preparation**
  - o Proceed with this adjustment after completing adjustment of the camera body side (except when only the EVF is to be adjusted).
    When only the EVF is to be adjusted, use a 5V supply voltage and **EVF VIDEO** signal of the standard signal level **(2Vp-p unterminated)**.

- **Presetting**
  1) **IRIS CONTROL KNOB (GX-N8U/UT)** → **"CENTER"**
  2) **"Ⓐ Iris compensation" switch (GX-N6U/UT)** → **"0"**
  3) **White balance switch** → **" ▼ " (INDOOR)**
  4) **R855 BRIGHT VR** → **To obtain a picture**

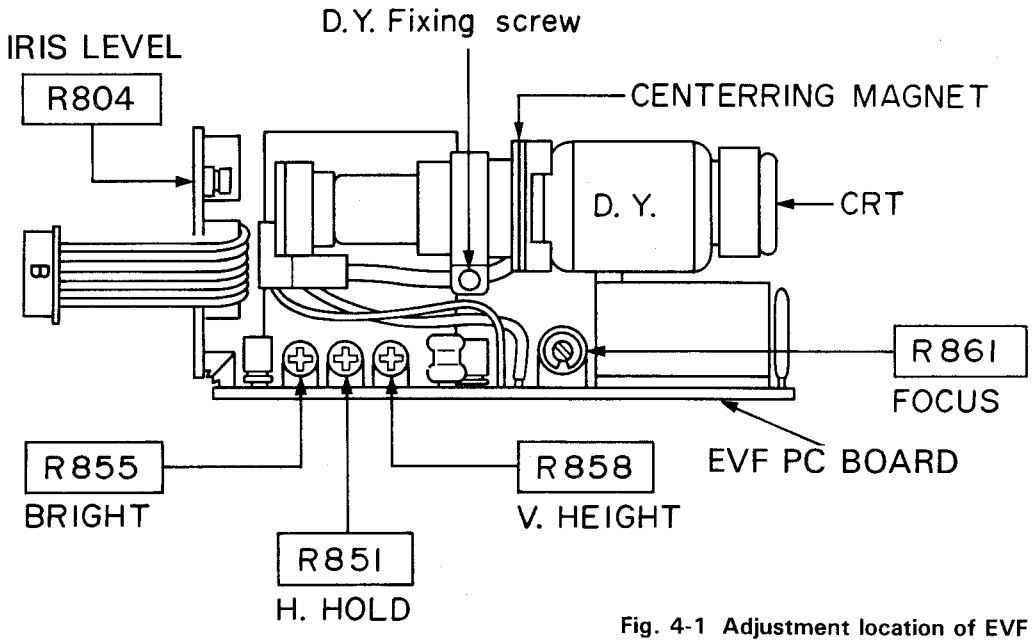


Fig. 4-1 Adjustment location of EVF

- **Adjusting procedures**

	ITEM	PATTERN OR SUBJECT	ADJUSTMENT PARTS	ADJUSTING METHOD
1	**HORIZONTAL SYNC**	Any gray scale pattern, monoscope pattern, or resolution pattern is OK.	**R851 H. HOLD VR**	1) Set **R851 H. HOLD VR** fully-counterclockwise (in the high H. Freq. direction) **Fig. 4-2 (A)** **2) Return R851 H. HOLD VR** clockwise. Stop turning it when synchronization is adjusted and the bend appearing on the screen upper portion ⓐ is corrected. **Fig. 4-2 (A)→(B)→(C)** **(Note)** Adjustment is facilitated when conducted while shooting a linear pattern such as a color bar pattern.

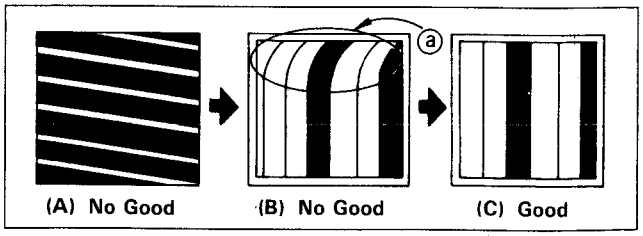
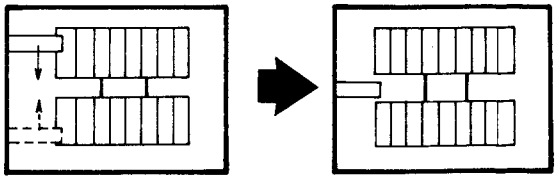


Fig. 4-2 Adjustment of H. HOLD (using Color bar pattern)

	ITEM	PATTERN OR SUBJECT	ADJUSTMENT PARTS	ADJUSTING METHOD
2	**VERTICAL AMPLITUDE**	Monoscope pattern or crosshatch pattern	**R858 V. HEIGHT VR**	Adjust **R858 V. HEIGHT VR** so that the amplitude of the pattern is normal.
3	**PICTURE LOCATION**		**Centering magnet of the Deflection Yoke**	Adjust the **CENTERING MAGNET** so that the center of the pattern coincides with the center of the frame of the EVF screen.
4	**BRIGHTNESS**	Gray scale pattern	**R855 BRIGHT VR**	Turn the **R855 BRIGHT VR** while observing the EVF screen and stop turning it just before the pattern's black portion becomes invisible. **(Note)** Shoot the gray scale pattern so that it fills the whole area of the frame.
5	**SCREEN TILT/SCAN WIDTH ADJUSTMENT**	Mono SCO pattern or cross hatch pattern	**D.Y. installation position**	1. Loosen the D.Y. fixing screw. 2. Rotate the D.Y. and cause the screen to become horizontal against the mask. 3. Move the D.Y. forward and backward so that the scan width becomes about 90% overscanned. 4. Tighten the D.Y. fixing screw and then confirm that the screen position has not deviated.
6	**FOCUS**	Gray scale pattern or monoscope pattern	**R861 FOCUS VR**	While monitoring the EVF screen turn **R861 FOCUS VR** as far cw as possible, as long as the picture is in good focus.
7	**HIGH VOLTAGE CHECK**		———	Connect the high voltage meter of CRT anode and make sure that the meter indicator is within **2.5±0.3kV.**
8	**IRIS INDICATOR Adjustment**	Gray scale pattern	**R804 IRIS LEVEL**	Adjust **R804 (IRIS LEVEL)** so that the **IRIS LEVEL** INDICATOR is in the middle of the picture, as shown in **Fig. 4-3.**  **Fig. 4-3 IRIS INDICATOR Adjustment**
9	**FINAL CHECK**	Shoot patterns or other subjects and operate **zoom, focus, iris control switch,** VCR (VTR) switch, etc.. Thus make sure that brightness, contrast, focus, size and location of the picture, **iris indication, VCR (VTR) start/stop indication** are all proper. Operate also the WHITE BALANCE SWITCH and make sure that white balance indication (LED indication on the CRT mask area) is properly achieved. Further reduce the camera supply voltage (12V input) and make sure that **battery alarm indication** on the EVF is properly achieved when the voltage is below **ca. 10.8V.**		

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GX-N8U/UT
GX-N6U/UT
STANDARD CIRCUIT DIAGRAM

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GX-N8U/UT :
GX-N6U/UT : (No. 5660)
May, 1985

1 NOTES ON USING THIS CIRCUIT DIAGRAMS

1. Since the circuit diagram is a standard one, the circuit and circuit constants may be object to change for improvement without any notice.
2. Replacing the shaded (▒) parts in the circuit diagram, be sure to use parts specified to safety purposes.
3. The voltage values and waveforms have been measured under the following conditions:
   - Illumination : Illumination condition during adjustment
   - Object : JVC Gray scale pattern (γ = 2.2, 11 steps)
   - Iris : Iris switch ~ Auto iris (AGC ON) " Ⓐ ", iris compensation switch ~ "O" position
   - VTR mode indication : Pause mode
   - White balance : Indoor setting
   - Voltage values : All DC voltage values. Measured by a high-precision tester or digital voltmeter.
   - Waveforms : Oscilloscope sweep time H: 10 μS/div. V: 5 mS/div. Others: Measured time is shown. Usually a probe of 10 : 1 is used. (Indicated when a 1 : 1 probe is used.)

   * **Note**: See also the information given in the circuit diagram.
4. Indications on the circuit diagram.
   - Resistors
     10K: Resistance value
     non-unit: [Ω]
     K: [KΩ]
     M: [MΩ]
     1/2W: Rated allowable power [W]
     non-indication: 1/4 chip resistor or carbon resistor
   - Electrolytic Capacitors
     47/16: Capacitance value [μF] working voltage [V]
     NP/BP: Non-polar/bipolar electrolytic capacitor
     T or TAN: Tantalum capacitor
   - Capacitors
     0.033: Capacitance value
     1 or higher: [pF], less than 1 : [μF]
     100V: working voltage
     All DC voltage except for AC indicated.
     non-indication: 50V DC
     MY: Mylar capacitor
     PP: Polypropylene capacitor
     non-indication: Ceramic capacitor
   - Coils
     39 : Inductance value
     non-unit: [μH]
   - Connections
     □□ : Connector
     △ or ➔ : Chip connector
     ○ : Soldering

   * Refer to the parts list in the Service manual about the detailed indications of parts.
5. The non-indicated chip transistor and chip diode on the Circuit Diagrams are as follows.
   - PNP type : 2SB709 (Q, R)
   - NPN type : 2SC2778 (C, D)
   - Diode : MA151WA

Interchangeable parts	Supplied parts
SB709, 709 (P-R), 709 (Q-R)	2SB709 (Q, R)
2SC2778, 2778 (B, C), 2778 (C, D)	2SC2778 (C, D)
2SD601, 601 (Q, R)	2SD601 (Q, R)
2SD601A, 601A (Q, R)	2SD601 (Q, R)

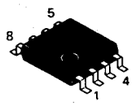
6. It is possible than the wiring diagram is inconsistent with the actual connection because of certain design improvements, etc. The diagram, therefore, should be used only for reference.
7. Color of P.C.B. pattern.
   Red color shows top side pattern of PC BOARD.
   Gray color shows bottom side pattern of PC BOARD.

8. Descriptions on these block diagrams, schematic diagrams, and PC boards are commonly applicable to **GX-N8U/UT**, and **GX-N6U/UT**.
GX-N6U/UT differs from **GX-N8U/UT** only in that the functions of "FADER." "ELECTRIC ZOOM," "AUTO WHITE BALANCE," and "AUTO FOCUS" are not included, with basic circuit arrangements being identical among those three types. In this connection, descriptions on **GX-N8U/UT** appear in Part 1 of this Manual, while in Part 2 explained are only those differences inherent in **GX-N6U/UT**. As to differences between the board used on **GX-N6U/UT** and those employed on **GX-N8U/UT**, refer to the Table listing below.

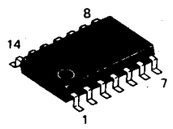
- **Board employed on GX-N8U/UT and GX-N6U/UT**

Names of board modules and other components	BOARD NO.		REMARKS
	GX-N8U/UT	GX-N6U/UT	
MOTHER BOARD	CAZ-1001A	CAZ-1002A	
DEF & HV BOARD	CAZ-3001A	CAZ-3002A	
PRE AMP. BOARD	CAZ-2001A	CAZ-2001A	
VTR TRIGGER BOARD	CAZ-9001B/A	CAZ-9001B/A	
AUDIO BOARD	CAZ-A001A	CAZ-A002A	
PRE-PROCESS BOARD	CAZ-B001A	CAZ-B001A	
CARRIER MATRIX BOARD	CAZ-C001A	CAZ-C001A	
DETECTOR BOARD	CAZ-D001A	CAZ-D001A	
BLACK SET BOARD	CAZ-E001A	CAZ-E001A	
COLOR SET BOARD	CAZ-F001A	CAZ-F001A	
CDP BOARD	CAZ-G001A	CAZ-G001A	
AGC BOARD	CAZ-H001A	CAZ-H001A	
ENCODER BOARD	CAZ-J001A	CAZ-J001A	
SSG BOARD	CAZ-K001A	CAZ-K001A	
VTR (IN/OUT) & BATTERY ALARM BOARD	CAZ-L001A	CAZ-L001A	
MIC BOARD	CAZ-M001A	CAZ-M002A	
SW. REGULATOR	CE40687	CE40687	
EVF BOARD	CAZ-6001A	CAZ-6001A	
LENS ASS'Y	CLC04206-A-BFZ	CLK07206-A-B	

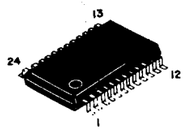
2 PIN ARRANGEMENTS OF ICs, TRANSISTORS AND DIODES



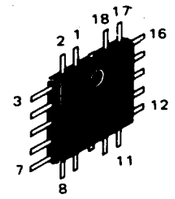
MN8029S (8 pin)
NJM082M (8 pin)
μPC4558G (8 pin)



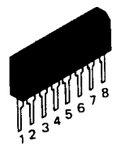
μPC4741G(14 pin)
μPD4013BG (14 pin)
TC4013BG (14 pin)
M51545P (16 pin)
MN4053BS (16 pin)



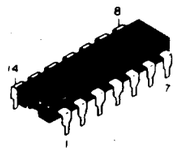
BA7020F (22 pin)
M51261P (20 pin)
M51262P (22 pin)
M51263P (24 pin)
AN2510S (24 pin)
M51264P (28 pin)



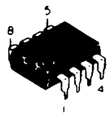
HA11720MP (18 pin)
HA11748B (28 pin)



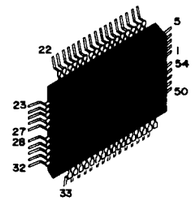
N5232L (8 pin)



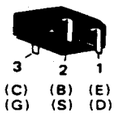
SN76670 (N) (14 pin)



NJM3414D (8 pin)



HD61907 (54 pin)



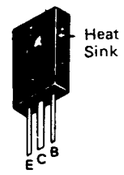
(C) (B) (E)
(G) (S) (D)

CHIP TRANSISTOR

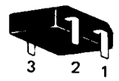
2SA1022 (C)
2SA1022 (B,C)
2SB709 (Q,R)
2SB709 (P-R)
2SB792 (Q-T)
2SB970 (Q-S)
2SC2404 (D)
2SC2405 (R-T)
2SC2778 (C,D)
2SC2778 (B,C)
2SD601 (QR)
2SD601A (QR)
2SD1030 (R)

CHIP FET

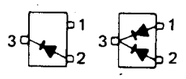
2SK316 (Q)



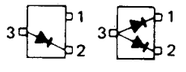
2SD781
2SD975



CHIP DIODE



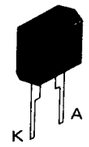
MA151K MA151WK
MA157



MA151A MA151WA

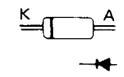
CHIP ZENER DIODE

MA3062
MA3075
MA3051
MA3120
MA3047-L



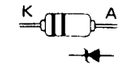
VARIABLE CAPACITOR

KV-1236XY



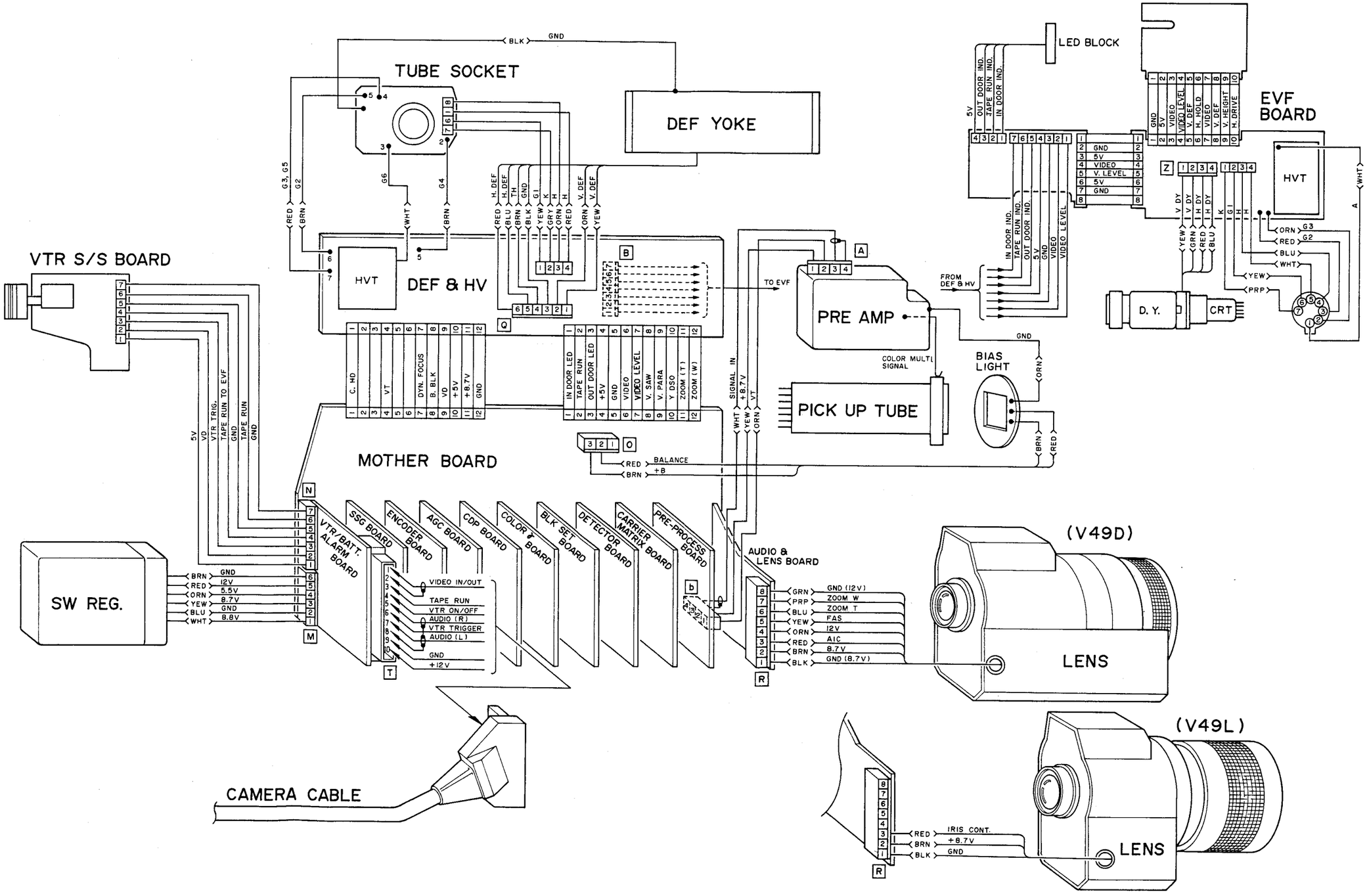
VERIABLE CAPACITOR DIODE
ISV68

DIODE
W06A
IS2473H

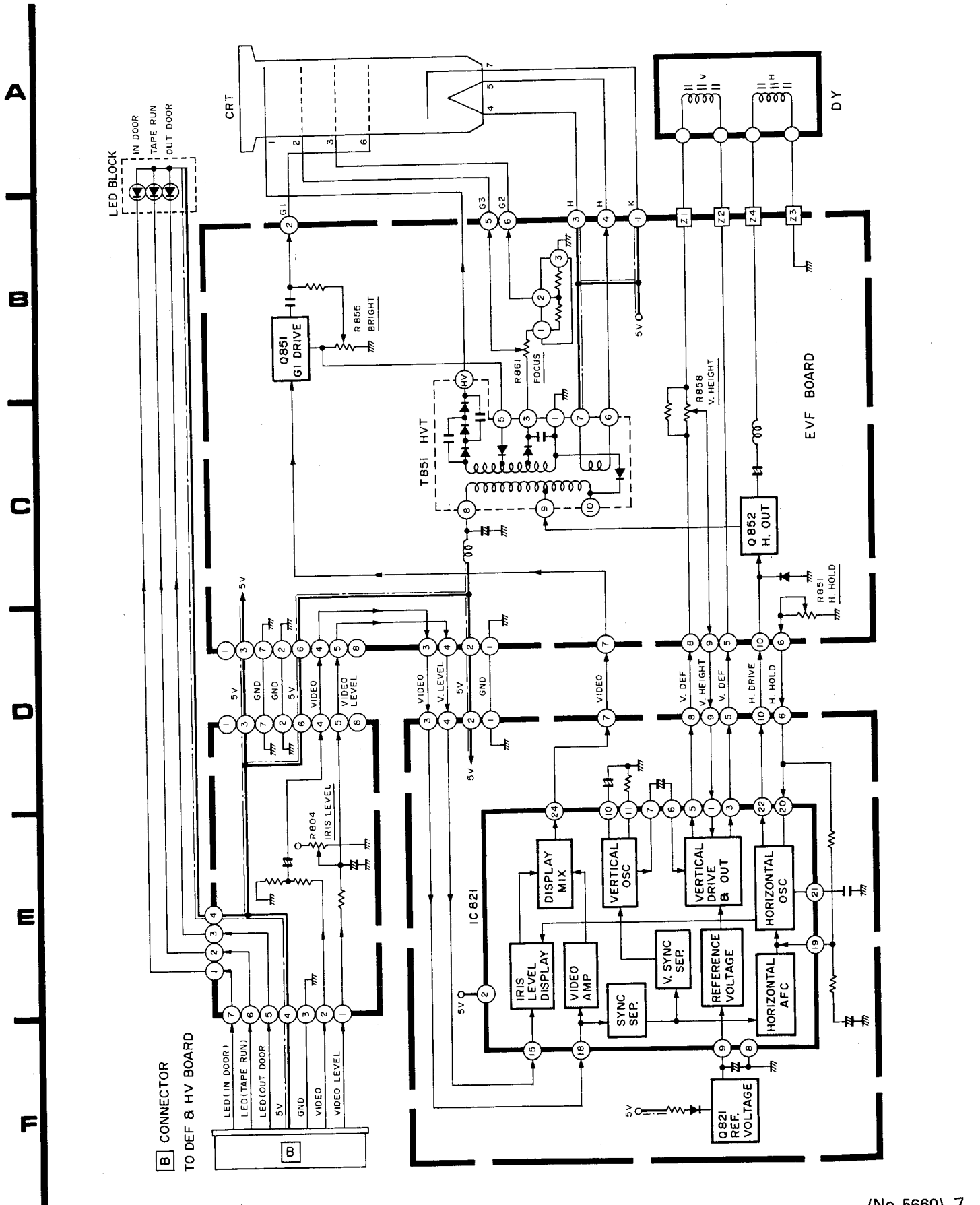


ZENER DIODE
MA4120

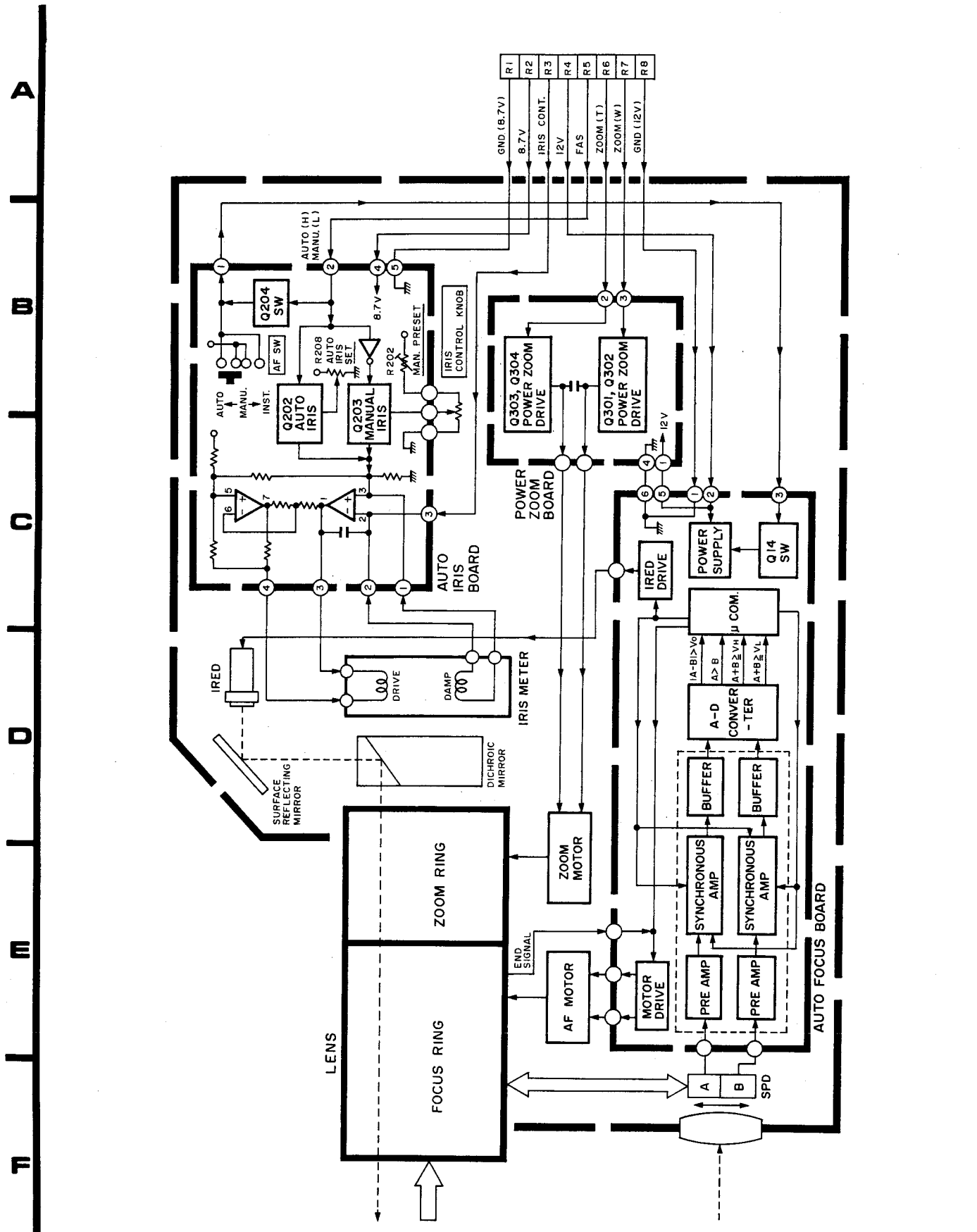
3 WIRING DIAGRAM



4 BLOCK DIAGRAM OF EVF

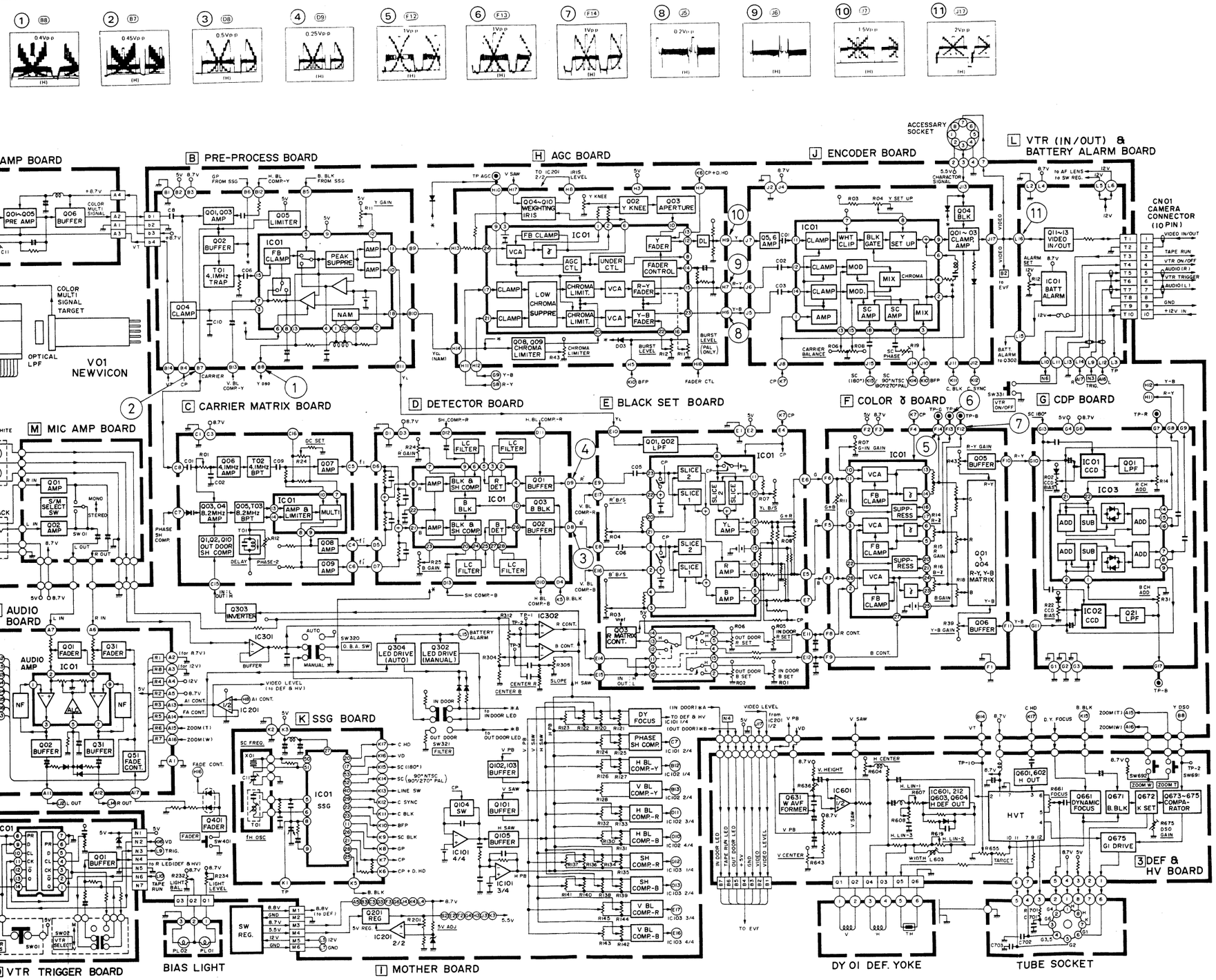


5 BLOCK DIAGRAM OF LENS (GX-N8U/UT)



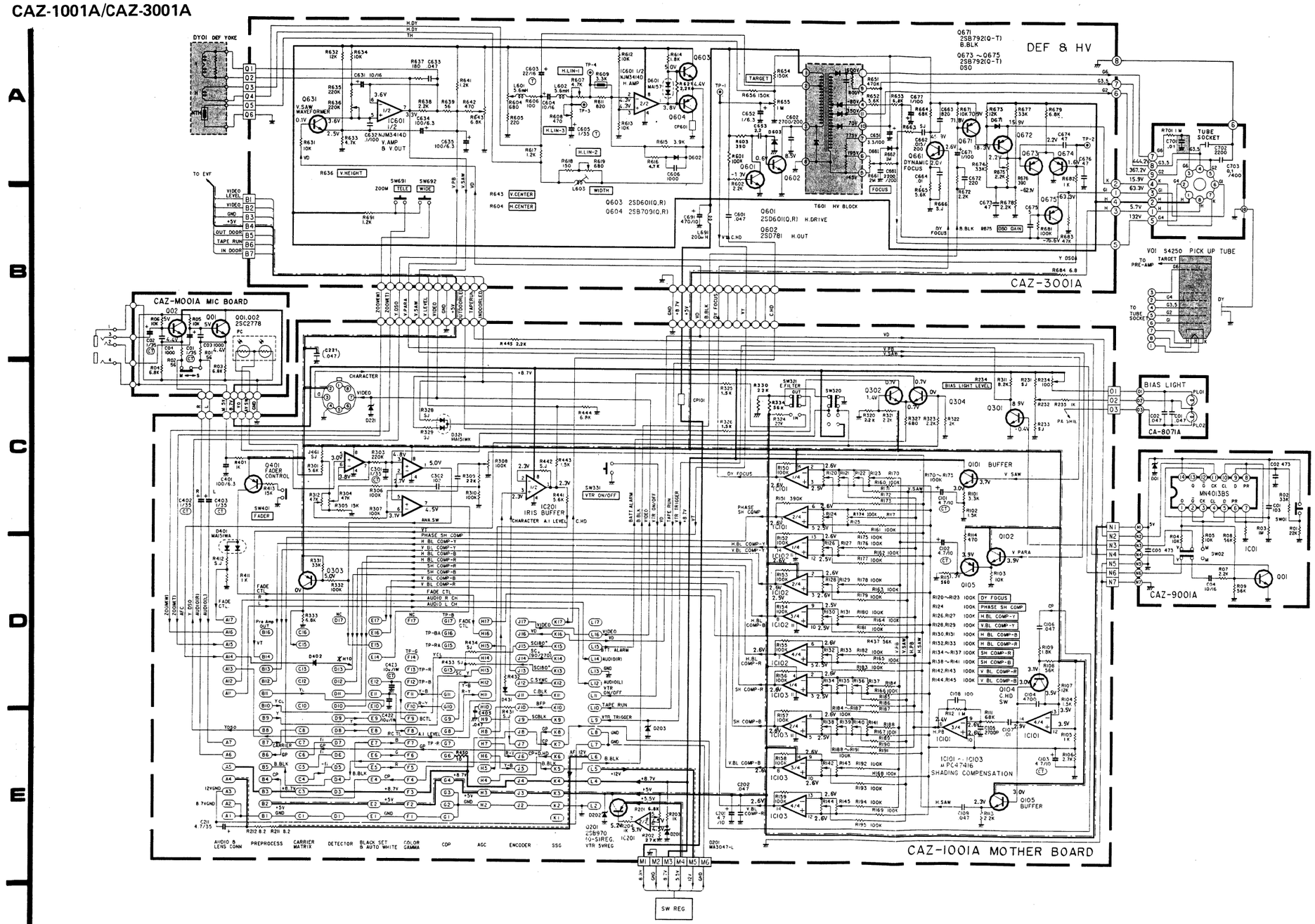
GX-N8U/UT	GX-N8U/UT
GX-N6U/UT	GX-N6U/UT

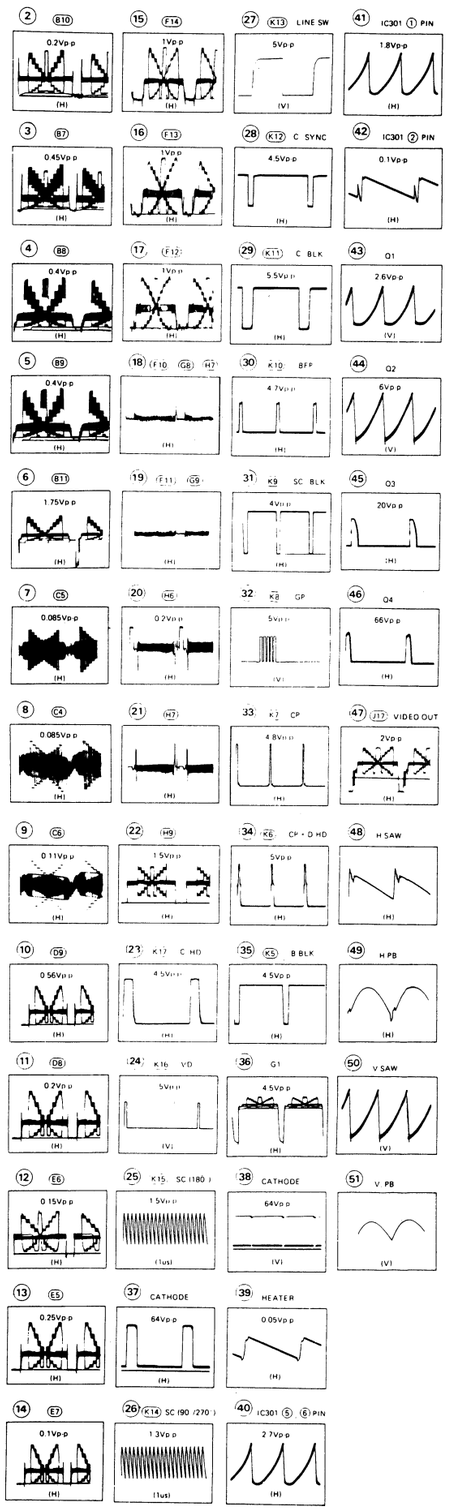
6 BLOCK DIAGRAM OF MAIN CIRCUIT (GX-N8U/UT)



7-1 CIRCUIT DIAGRAM OF MOTHER BOARD (GX-N8U/UT)

CAZ-1001A/CAZ-3001A



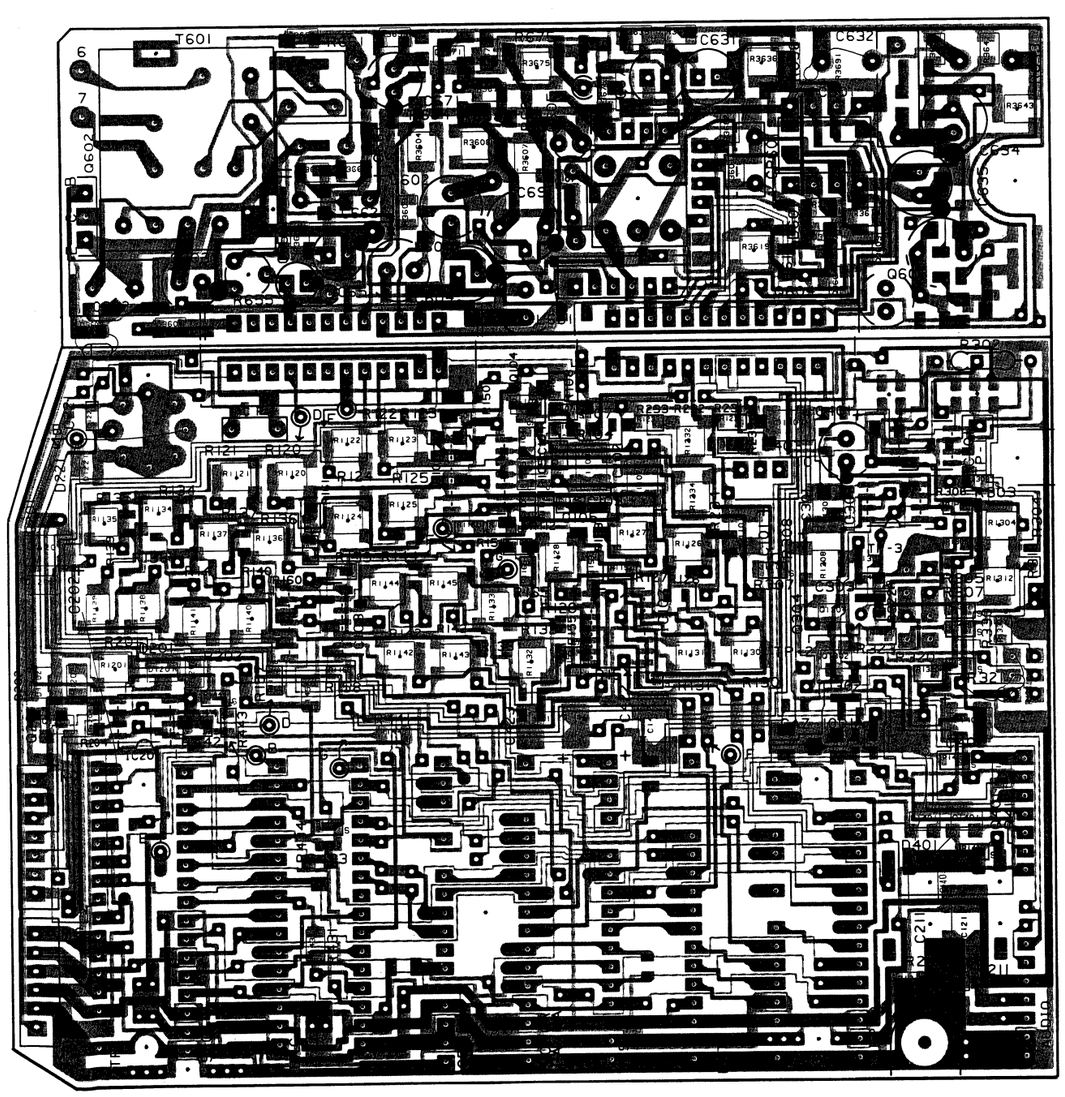

2 B10 0.2Vp-p (H)
15 F14 1Vp-p (H)
27 K13 LINE SW 5Vp-p (V)
41 IC301 ① PIN 1.8Vp-p (H)
3 B7 0.45Vp-p (H)
16 F13 1Vp-p (H)
28 K12 C SYNC 4.5Vp-p (H)
42 IC301 ② PIN 0.1Vp-p (H)
4 B8 0.4Vp-p (H)
17 F12 1Vp-p (H)
29 K11 C BLK 5.5Vp-p (H)
43 Q1 2.6Vp-p (V)
5 B9 0.4Vp-p (H)
18 F10 G8 H7
30 K10 BFP 4.7Vp-p (H)
44 Q2 6Vp-p (V)
6 B11 1.75Vp-p (H)
19 F11 G9
31 K9 SC BLK 4Vp-p (H)
45 Q3 20Vp-p (H)
7 C5 0.085Vp-p (H)
20 H6 0.2Vp-p (H)
32 K8 GP 5Vp-p (V)
46 Q4 66Vp-p (H)
8 C4 0.085Vp-p (H)
21 H7 33 K7 CP 4.8Vp-p (H)
47 J17 VIDEO OUT 2Vp-p (H)
9 C6 0.11Vp-p (H)
22 H9 1.5Vp-p (H)
34 K6 CP+D HD 5Vp-p (H)
48 H SAW (H)
10 D9 0.56Vp-p (H)
23 K17 C HD 4.5Vp-p (H)
35 K5 B BLK 4.5Vp-p (H)
49 H PB (H)
11 D8 0.2Vp-p (H)
24 K16 VD 5Vp-p (V)
36 G1 4.5Vp-p (H)
50 V SAW (V)
12 E6 0.15Vp-p (H)
25 K15 SC (180) 1.5Vp-p (1μs)
38 CATHODE 64Vp-p (V)
51 V PB (V)
13 E5 0.25Vp-p (H)
37 CATHODE 64Vp-p (H)
39 HEATER 0.05Vp-p (H)
14 E7 0.1Vp-p (H)
26 K14 SC (90 /270) 1.3Vp-p (1μs)
40 IC301 ⑤ ⑥ PIN 2.7Vp-p (H)

7-2 BOARD DIAGRAM OF MOTHER BOARD

CAZ-1001A/CAZ-3001A

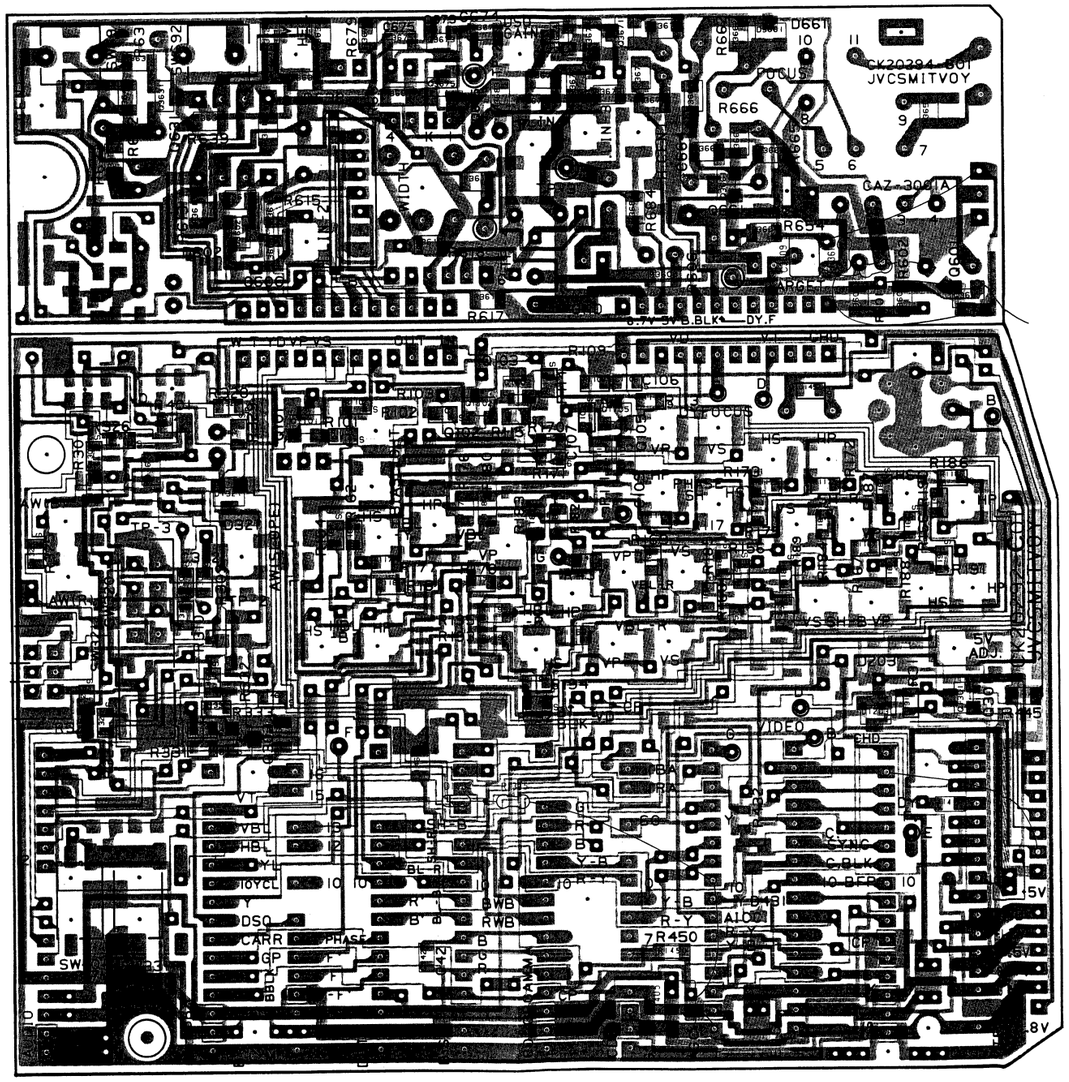
*Note: Red color shows top side pattern of PC BOARD.

Gray color shows bottom side pattern of PC BOARD.



FRONT

TOP VIEW

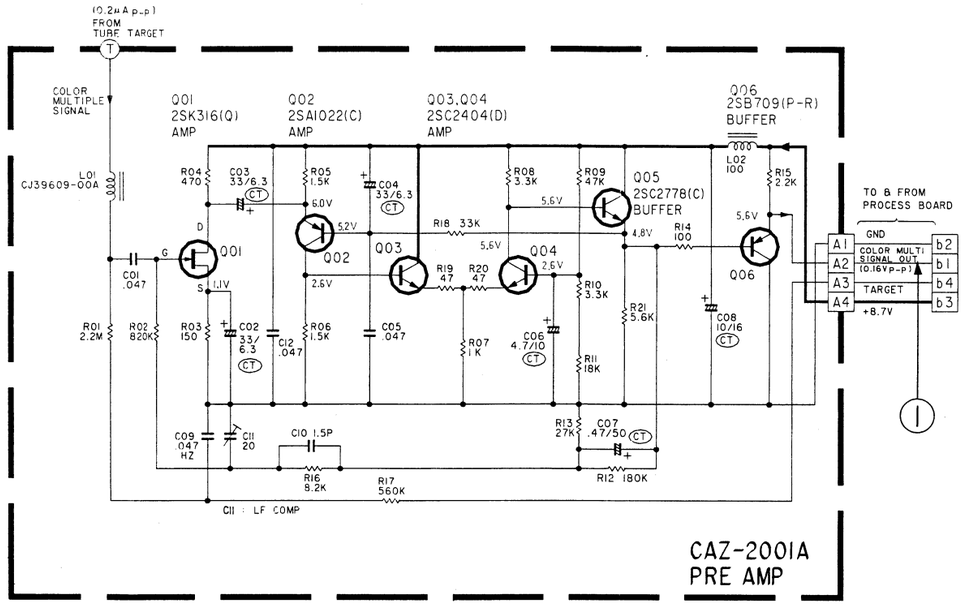


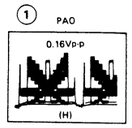
FRONT

BOTTOM VIEW

8-1 CIRCUIT DIAGRAM OF PRE-AMP

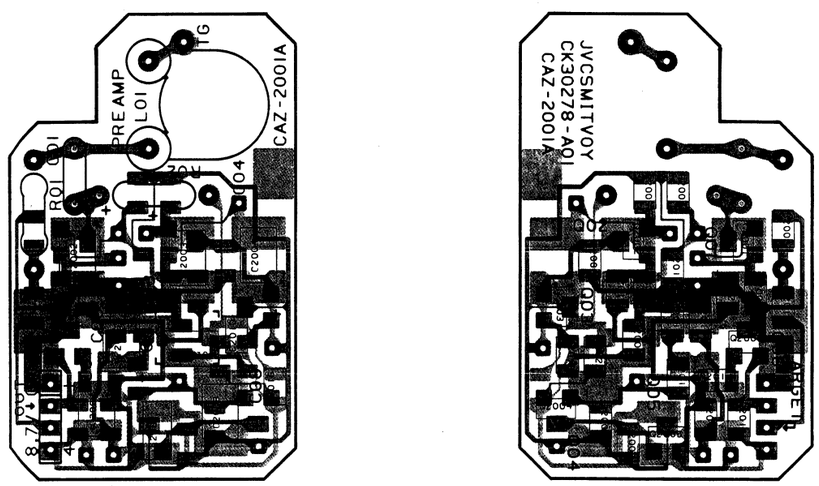
CAZ-2001A





8-2 BOARD DIAGRAM OF PRE-AMP

CAZ-2001A



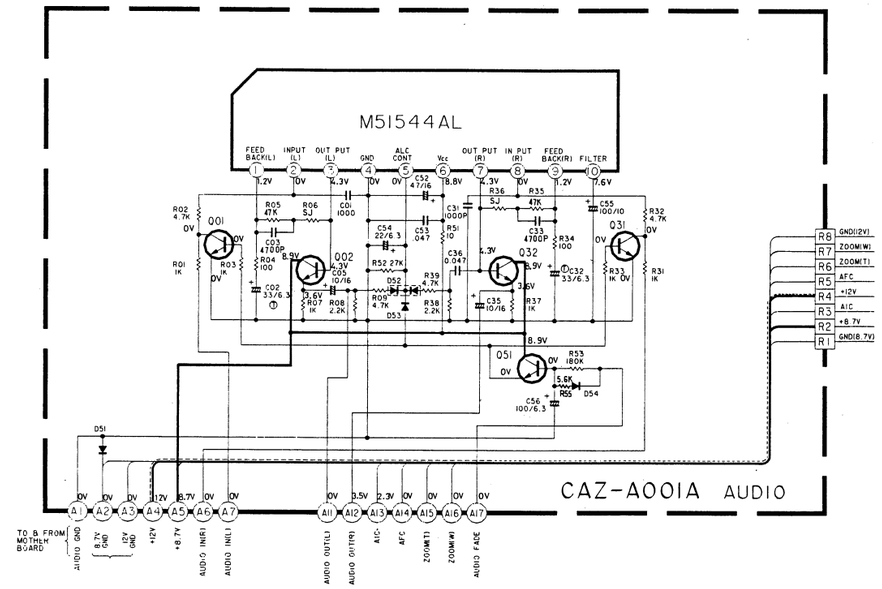
TOP VIEW

BOTTOM VIEW

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

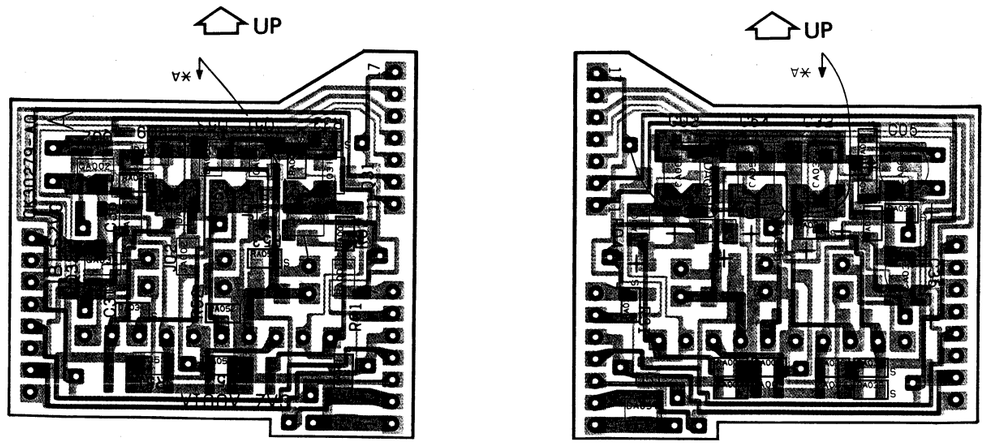
9-1 CIRCUIT DIAGRAM OF AUDIO BOARD Ⓐ

CAZ-A001A



9-2 BOARD DIAGRAM OF AUDIO BOARD Ⓐ

CAZ-A001A



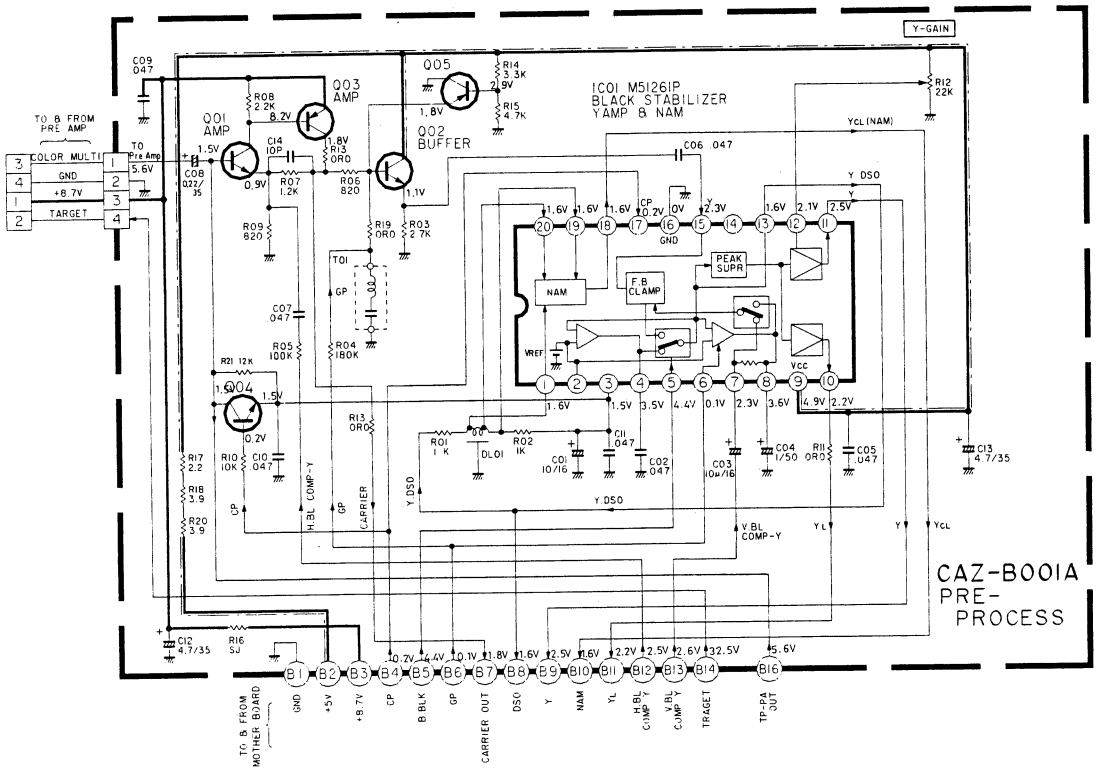
TOP VIEW

BOTTOM VIEW

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

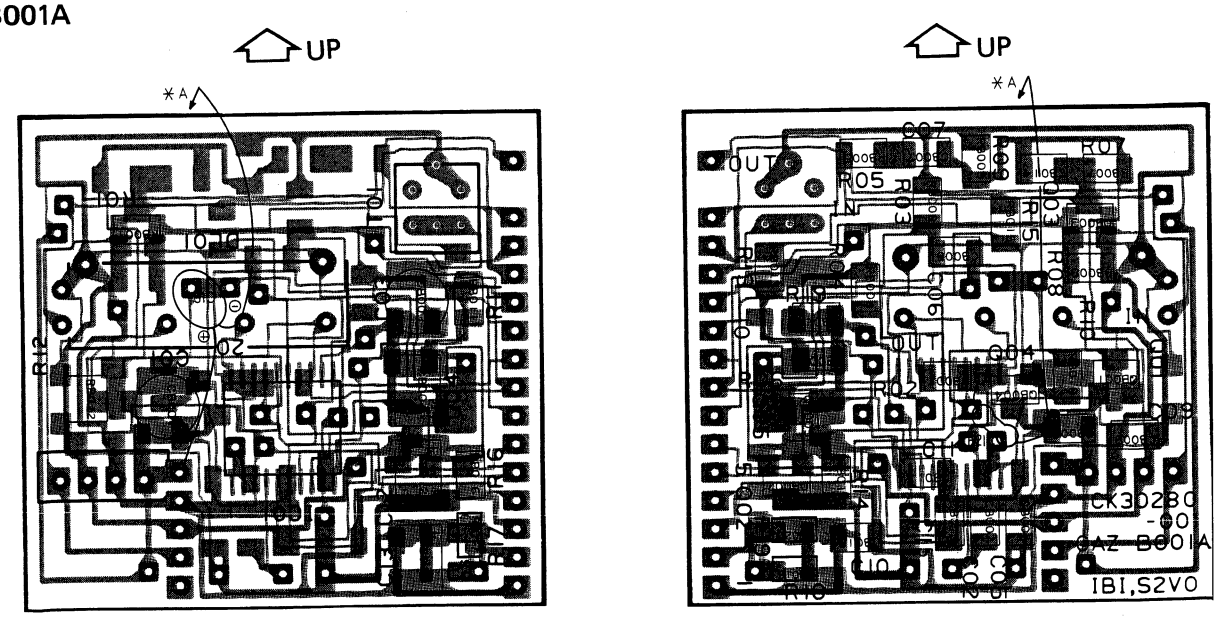
10-1 CIRCUIT DIAGRAM OF PRE-PROCESS BOARD Ⓑ

CAZ-B001A



10-2 BOARD DIAGRAM OF PRE-PROCESS BOARD Ⓑ

CAZ-B001A

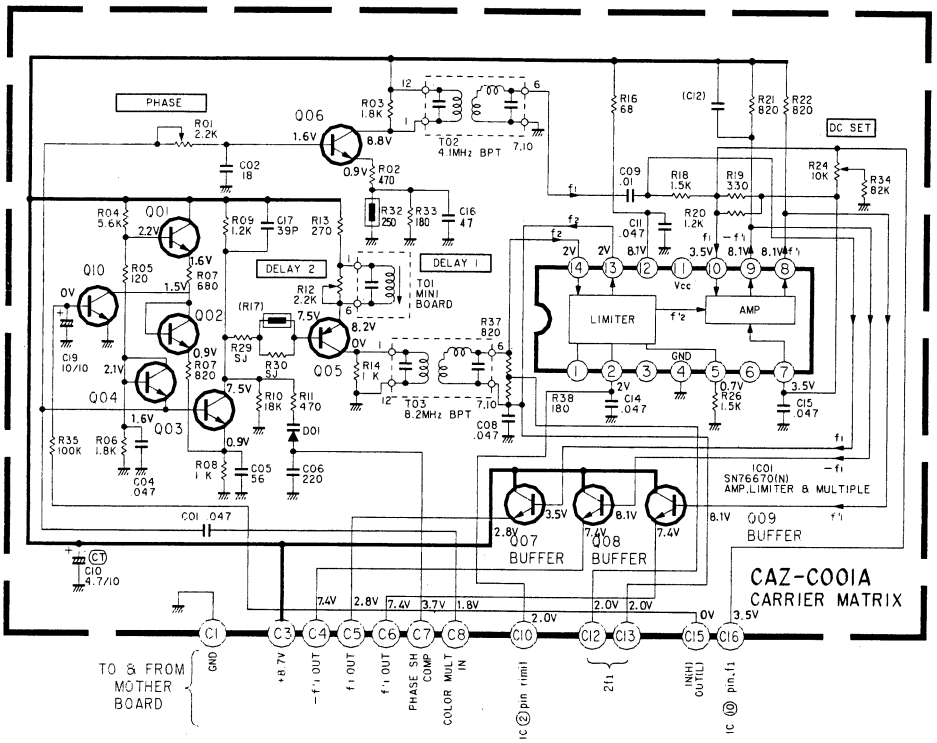


TOP VIEW **BOTTOM VIEW**

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

11-1 CIRCUIT DIAGRAM OF CARRIER MATRIX BOARD ©

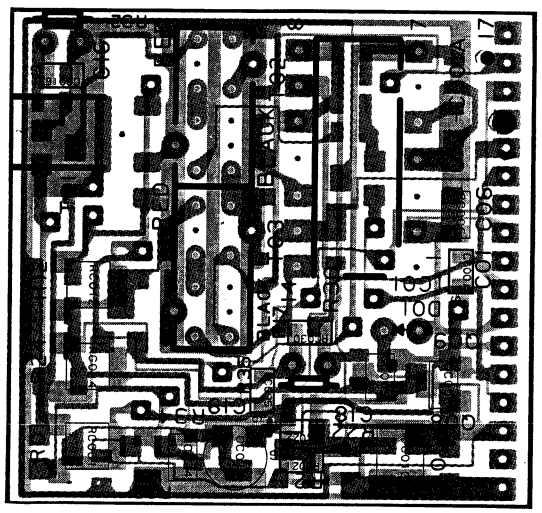
CAZ-C001A



11-2 BOARD DIAGRAM OF CARRIER MATRIX BOARD ©

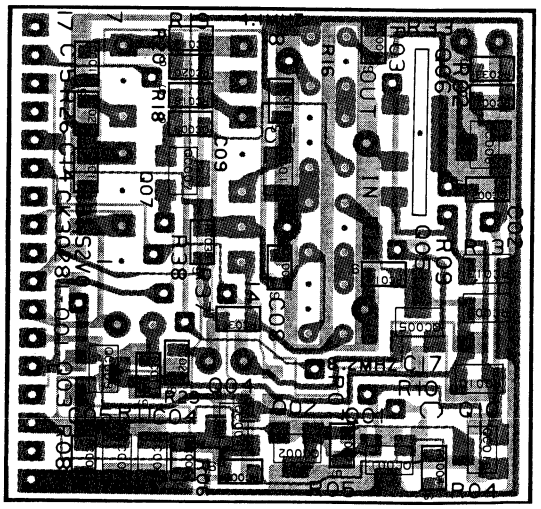
CAZ-C001A

UP



TOP VIEW

UP



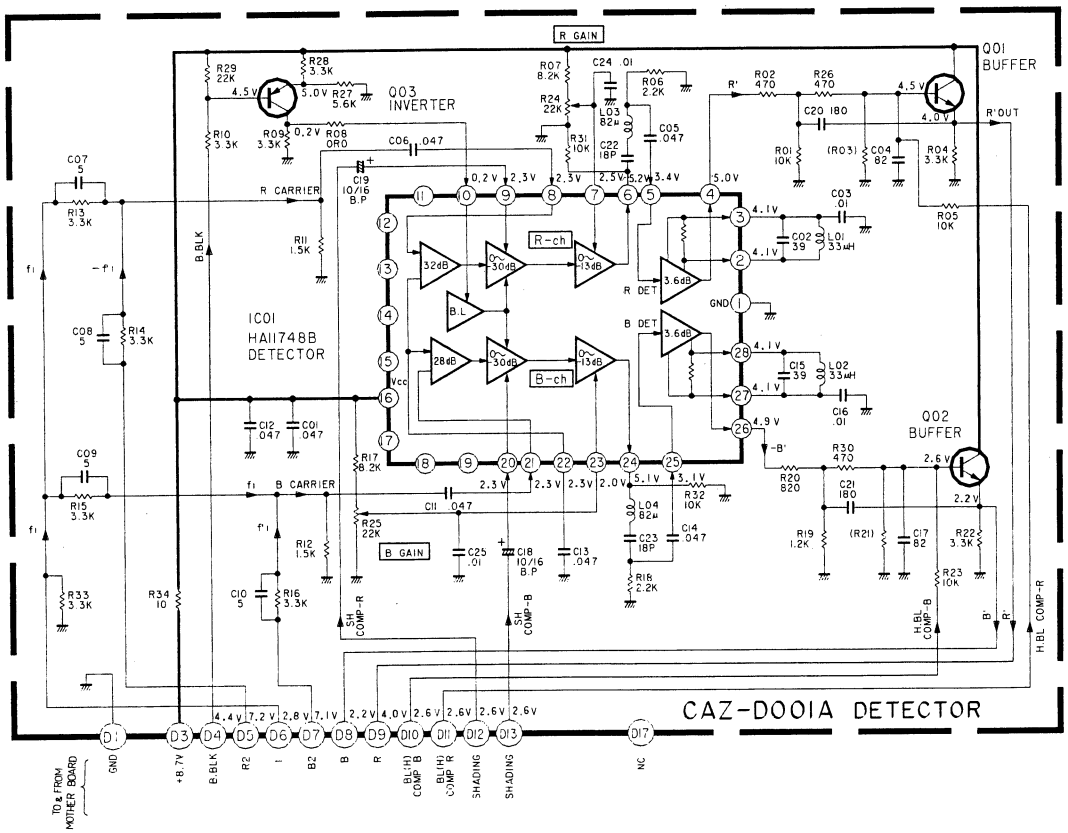
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

12-1 CIRCUIT DIAGRAM OF DETECTOR BOARD Ⓓ

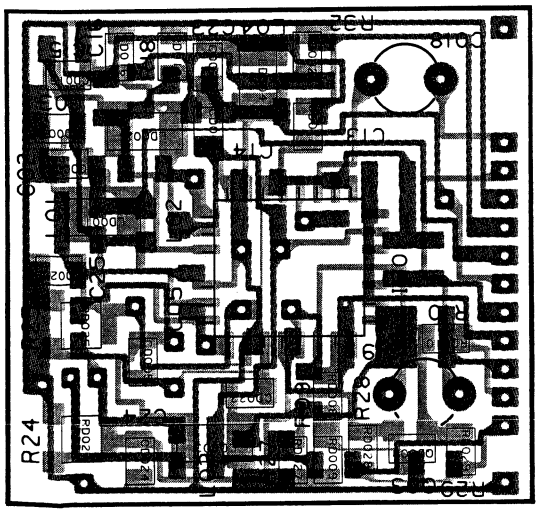
CAZ-D001A



12-2 BOARD DIAGRAM OF DETECTOR BOARD Ⓓ

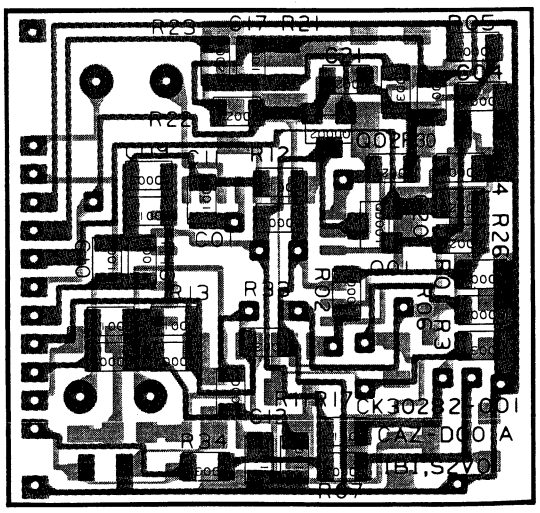
CAZ-D001A

UP



TOP VIEW

UP



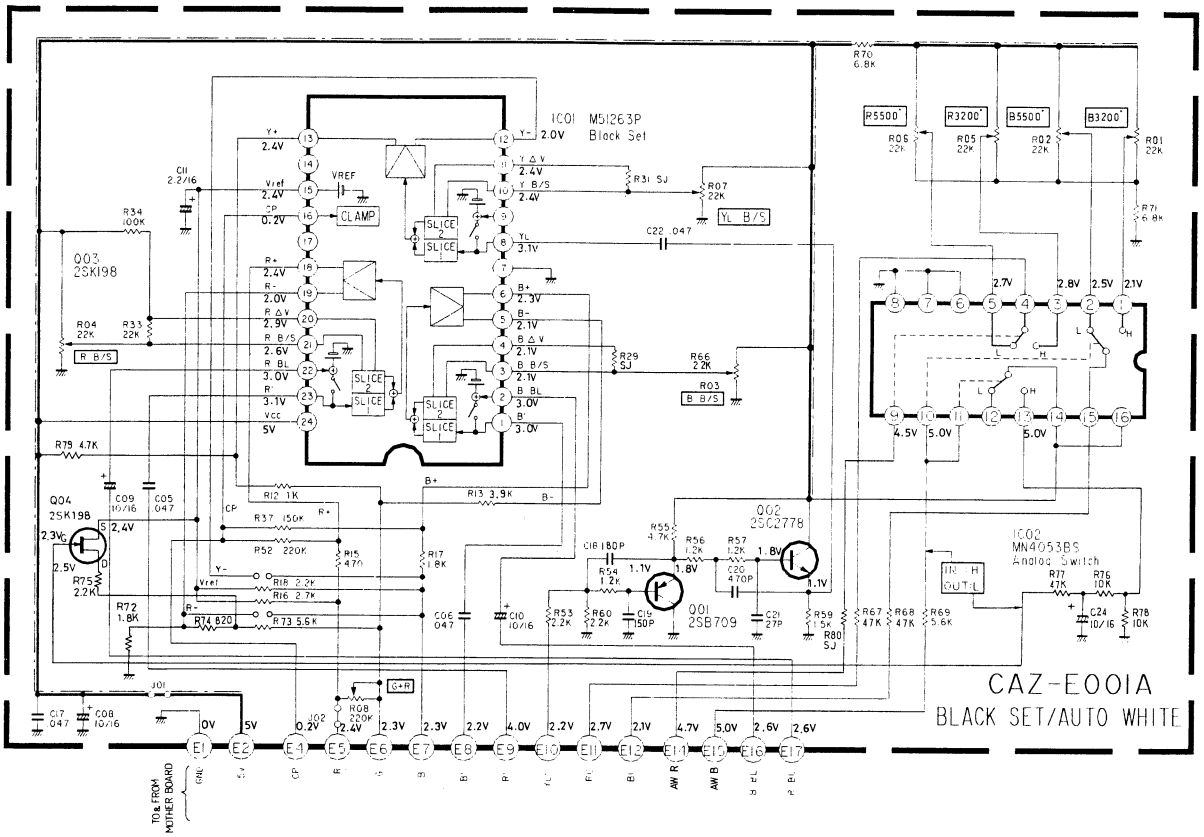
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

13-1 CIRCUIT DIAGRAM OF BLACK SET/AUTO WHITE BOARD Ⓔ

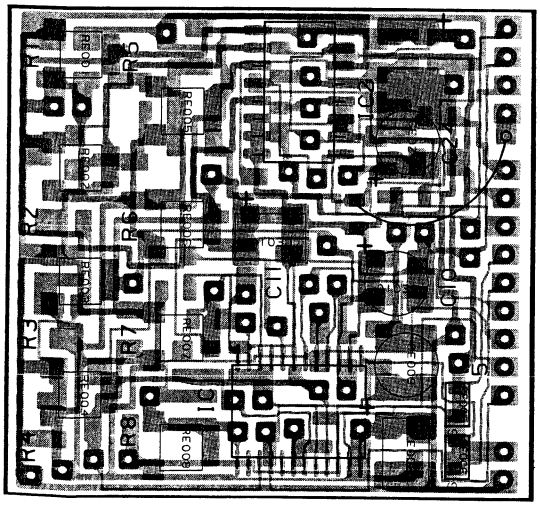
CAZ-E001A



13-2 BOARD DIAGRAM OF BLACK SET /AUTO WHITE BOARD Ⓔ

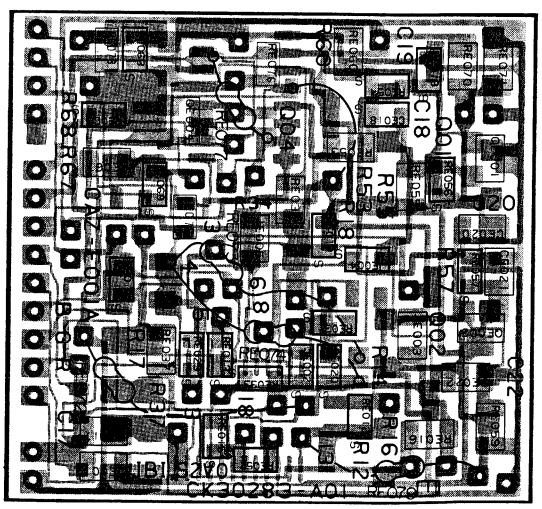
CAZ-E001A

UP



TOP VIEW

UP



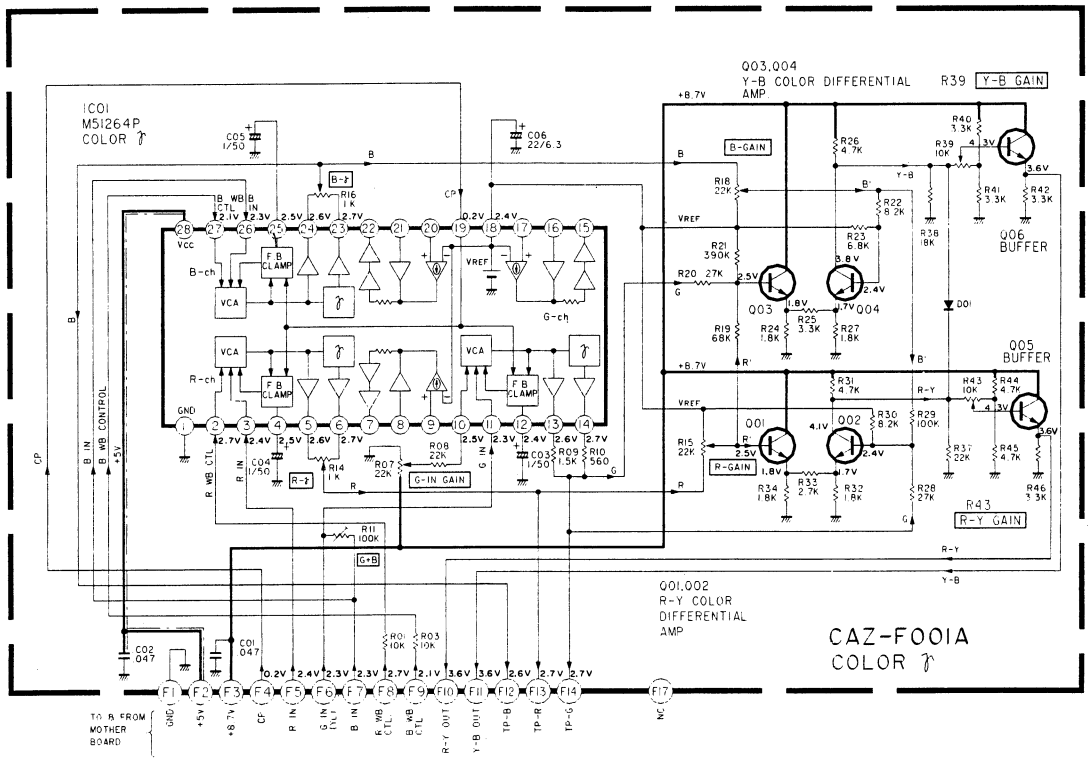
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

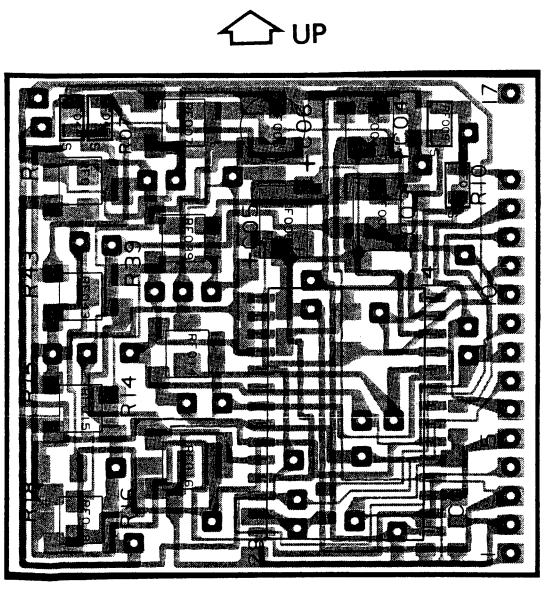
14-1 CHRCUIT DIAGRAM OF COLR γ BOARD Ⓕ

CAZ-F001A

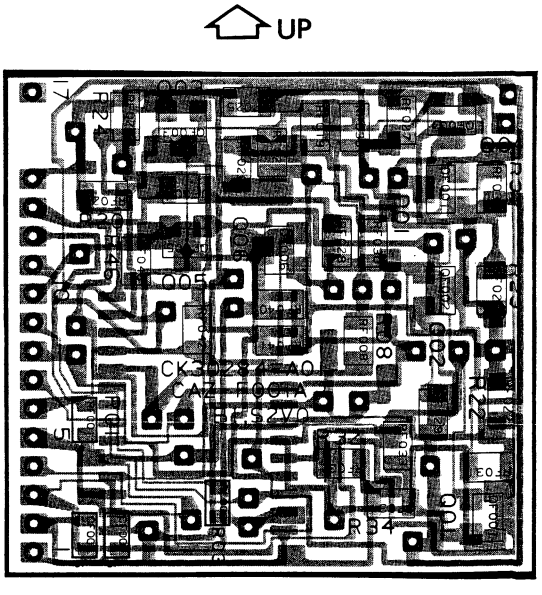


14-2 BOARD DIAGRAM OF COLOR γ BOARD Ⓕ

CAZ-F001A



TOP VIEW



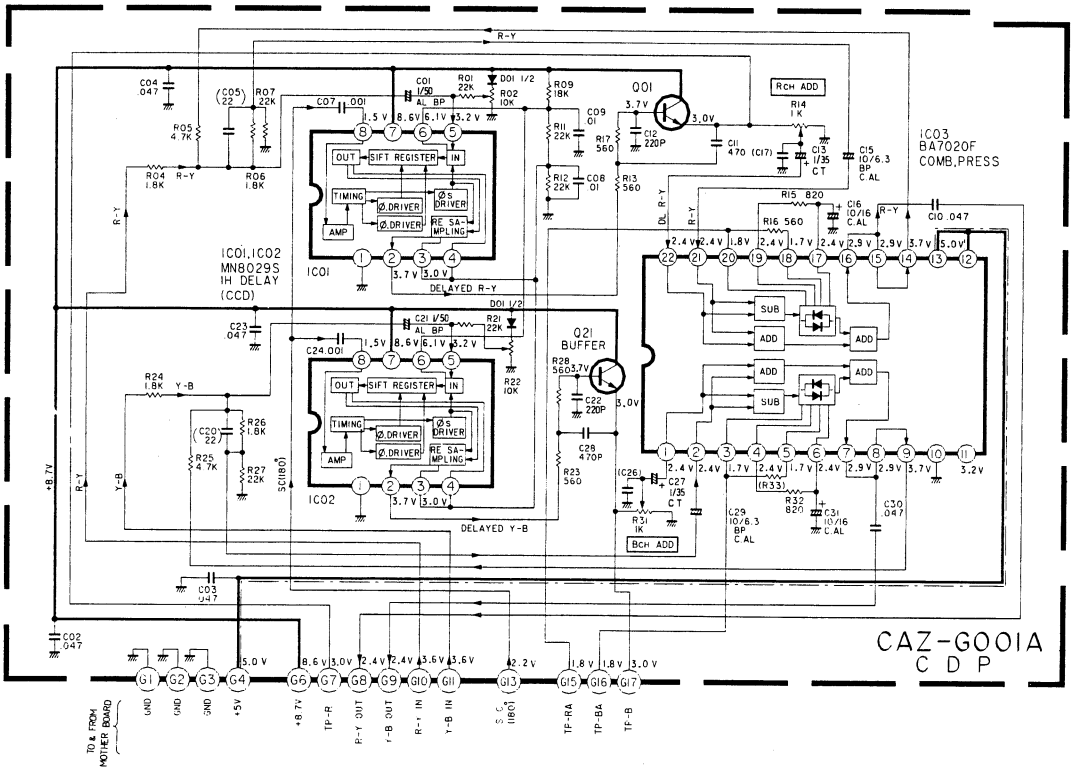
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

15-1 CIRCUIT DIAGRAM OF CDP BOARD Ⓖ

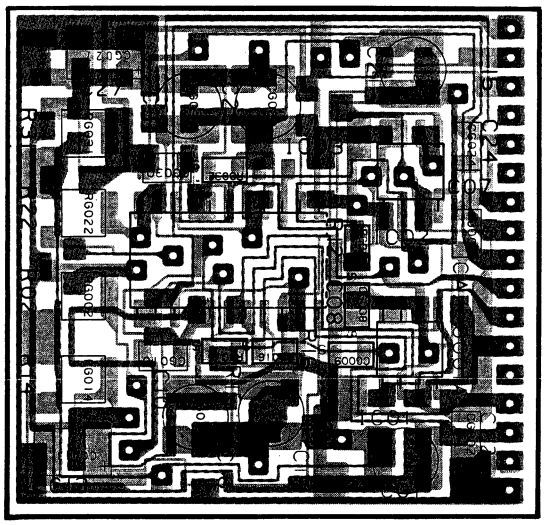
CAZ-G001A



15-2 BOARD DIAGRAM OF CDP BOARD Ⓖ

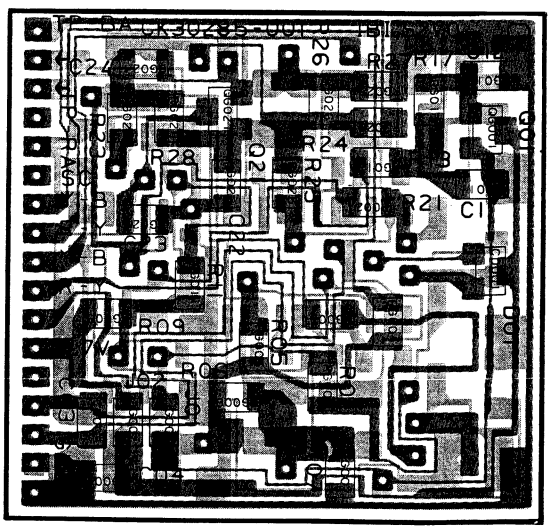
CAZ-G001A

UP



TOP VIEW

UP



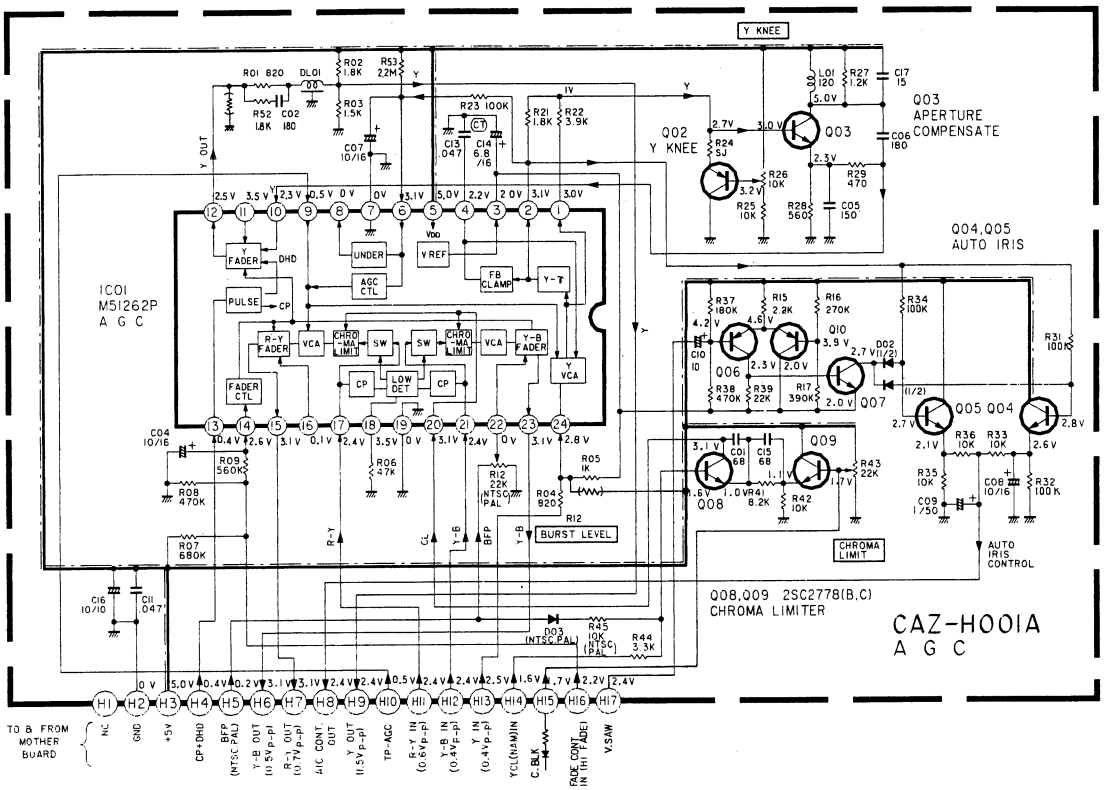
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

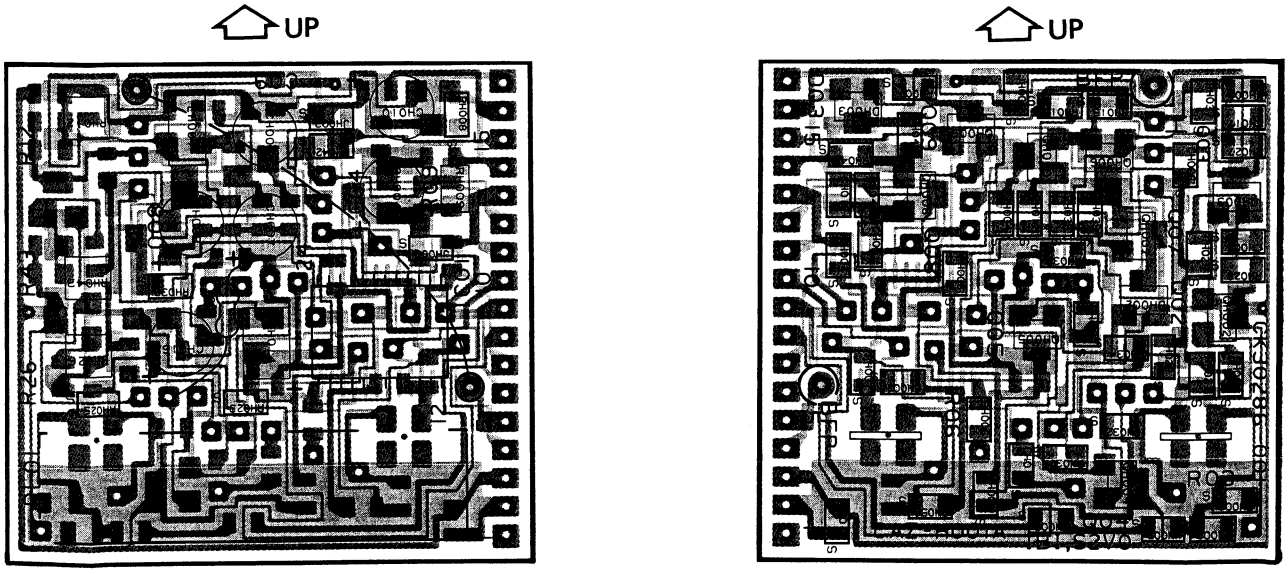
16-1 CIRCUIT DIAGRAM OF AGC BOARD Ⓗ

CAZ-H001A



16-2 BOARD DIAGRAM OF AGC BOARD Ⓗ

CAZ-H001A

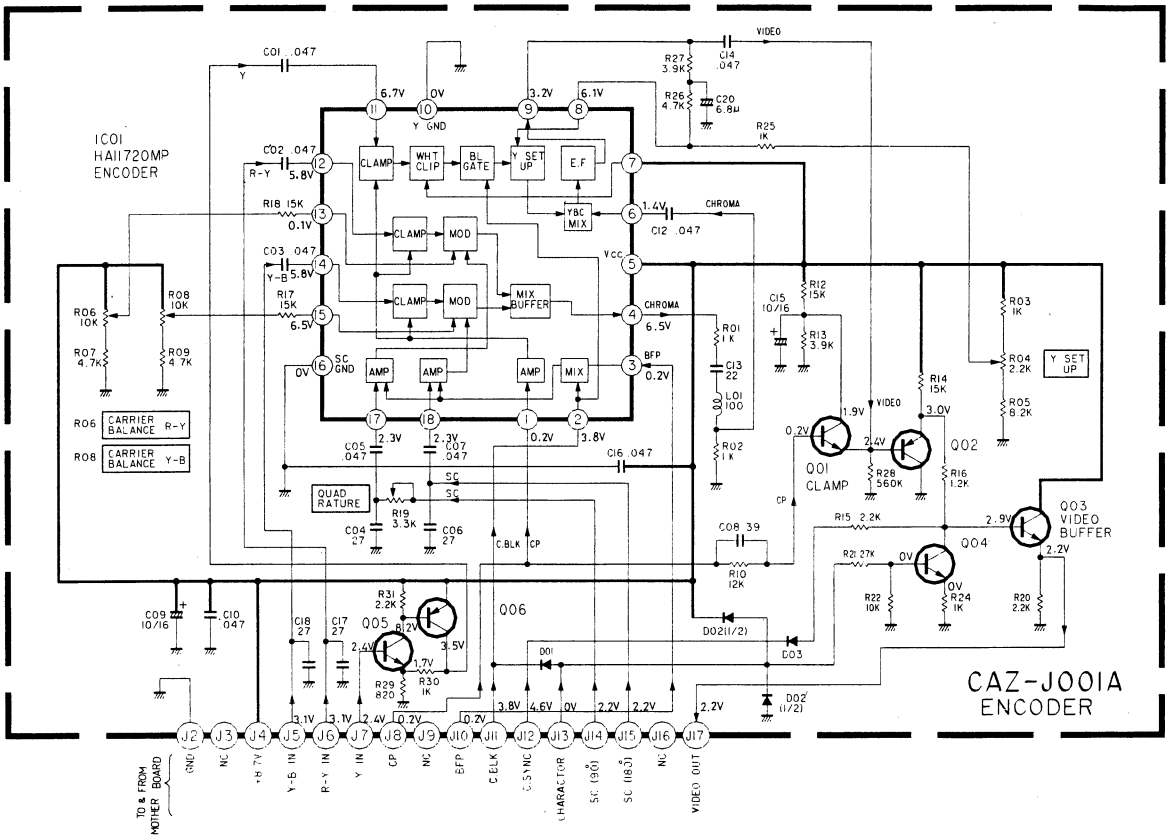


TOP VIEW **BOTTOM VIEW**

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

17-1 CIRCUIT DIAGRAM OF ENCODER BOARD Ⓙ

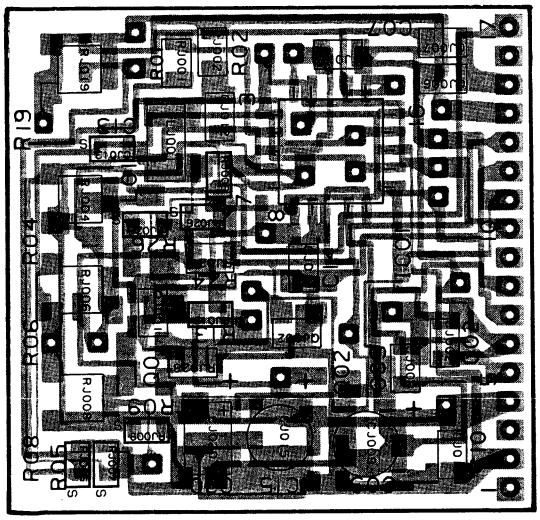
CAZ-J001A



17-2 BOARD DIAGRAM OF ENCODER BOARD Ⓙ

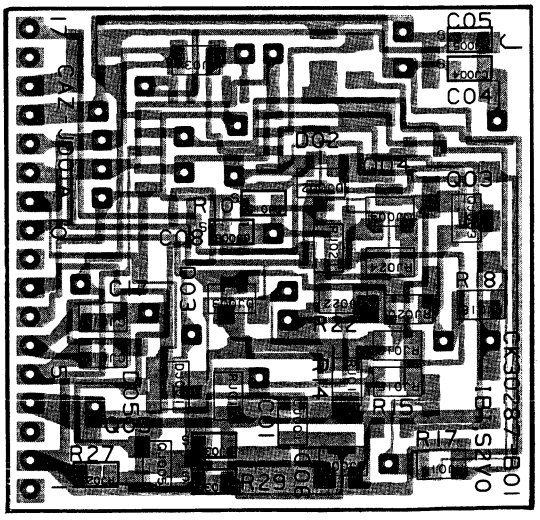
CAZ-J001A

UP



TOP VIEW

UP



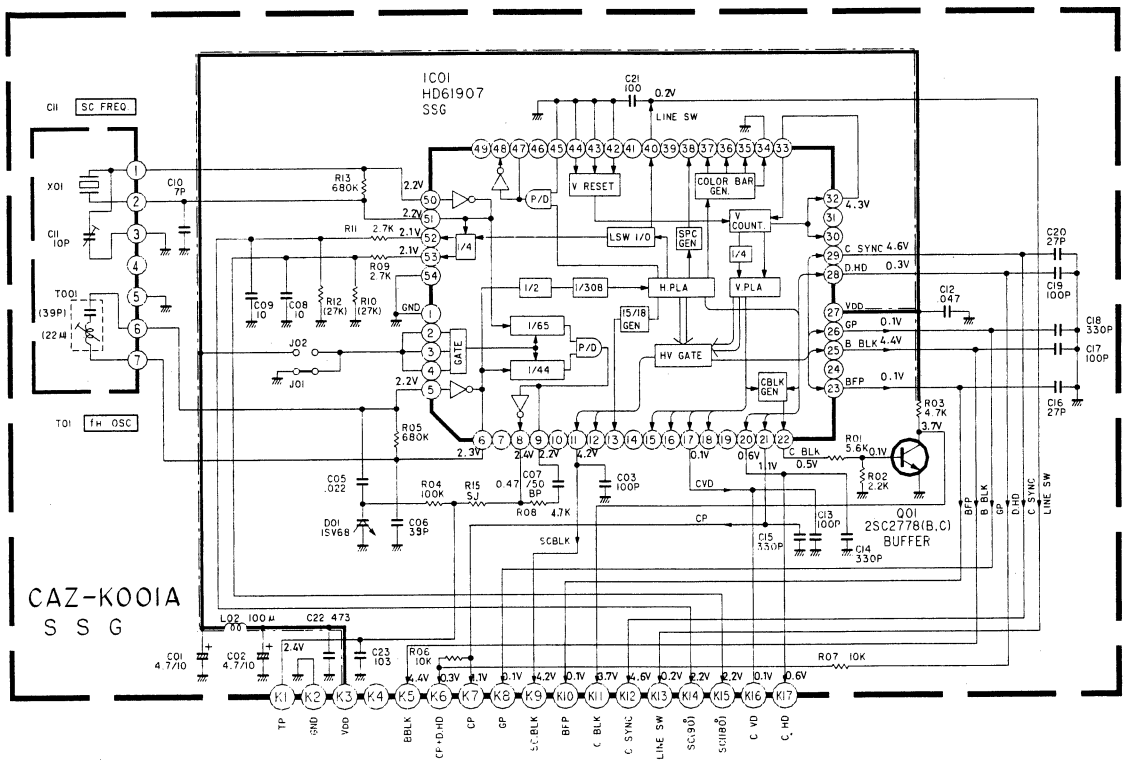
BOTTOM VIEW

Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

18-1 CIRCUIT DIAGRAM OF SSGBOARD Ⓚ

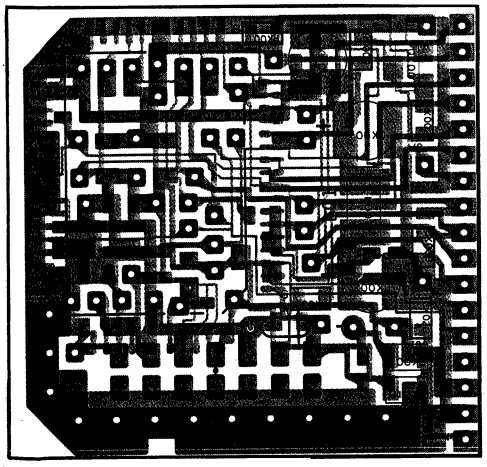
CAZ-K001A



18-2 BOARD DIAGRAM OF SSG BOARD Ⓚ

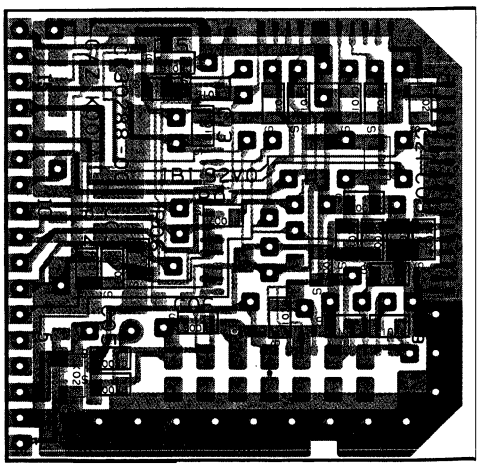
CAZ-K001A

UP

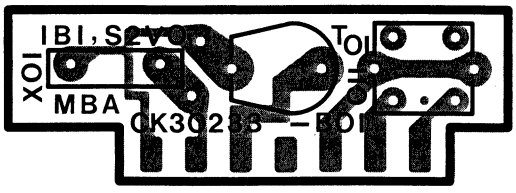


TOP VIEW

UP

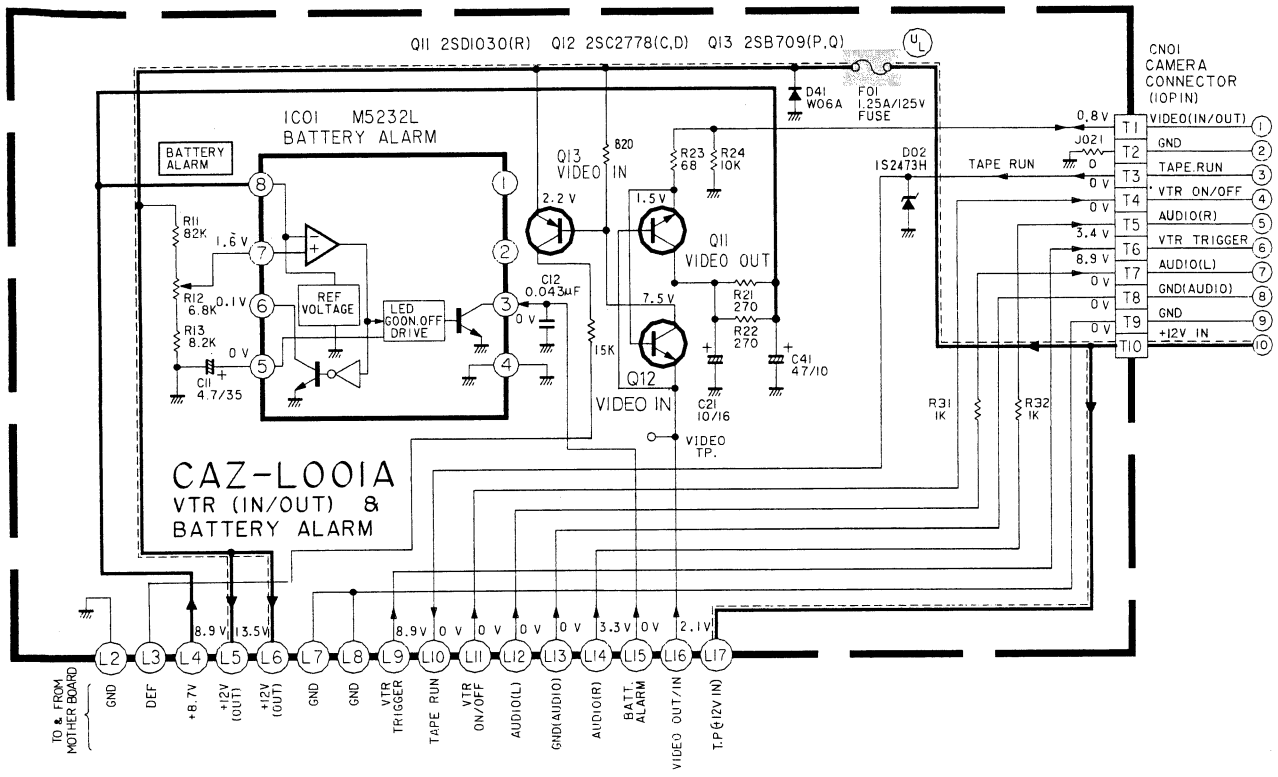


BOTTOM VIEW



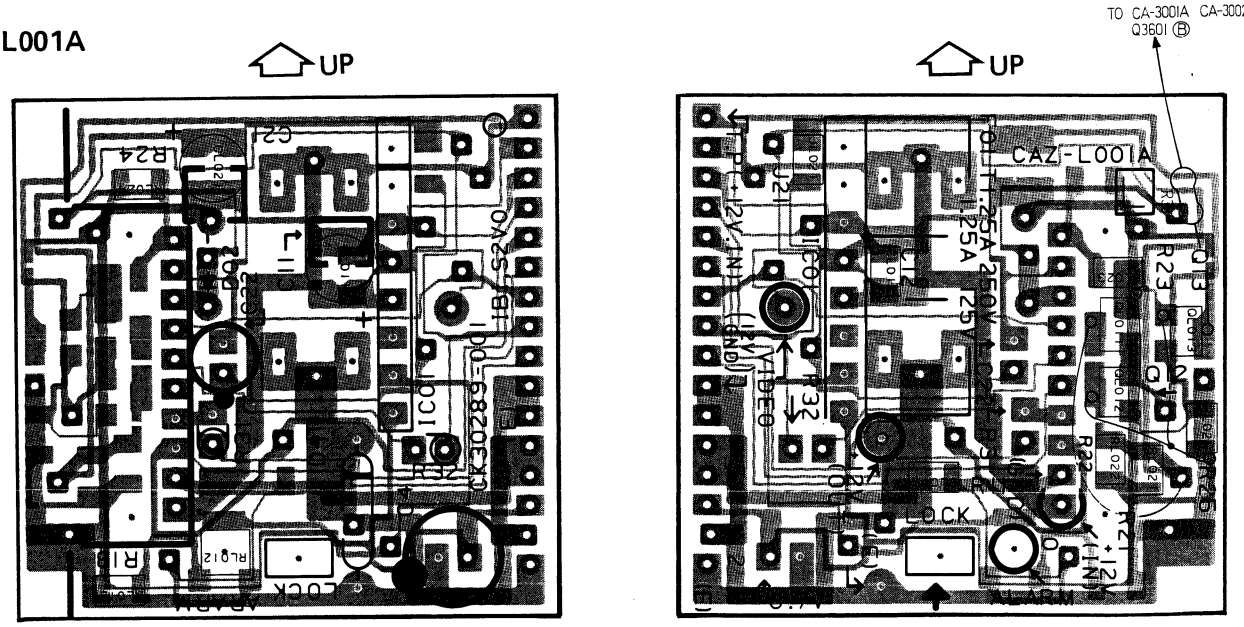
19-1 CIRCUIT DIAGRAM OF VTR TRIGGER, RUN & BATTERY ALARM BOARD Ⓛ

CAZ-L001A



19-2 BOARD DIAGRAM OF VTR TRIGGER, RUN & BATTERY ALARM BOARD Ⓛ

CAZ-L001A



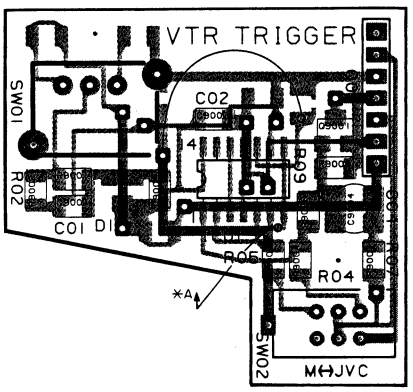
Top side pattern of PC BOARD.

Bottom side pattern of PC BOARD.

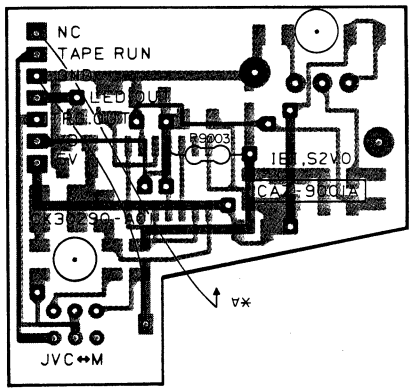
20 BOARD DIAGRAM OF VTR TRIGGR BOARD

CAZ-9001B/A

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.



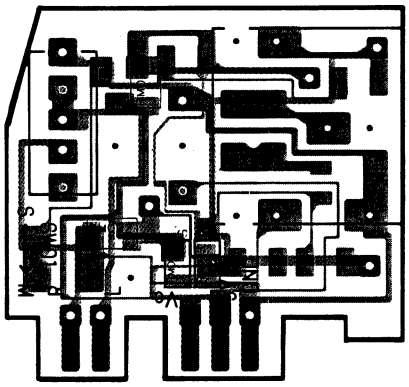
TOP VIEW



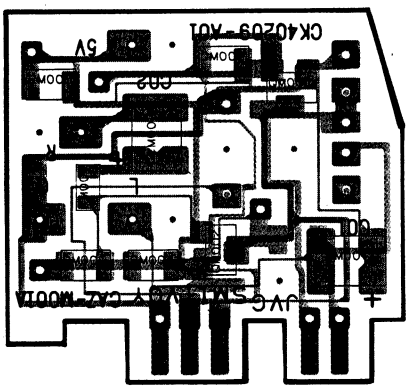
BOTTOM VIEW

21 BOARD DIAGRAM OF MIC BOARD

CAZ-M001A

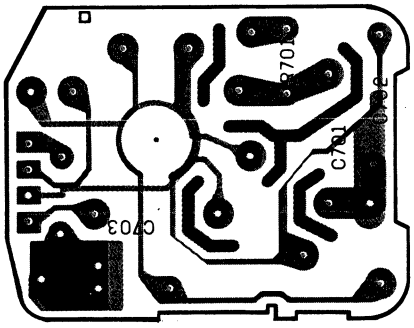


TOP VIEW

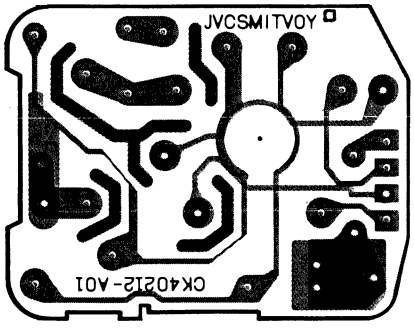


BOTTOM VIEW

22 BOARD DIAGRAM OF TUBE SOCKET BOAD



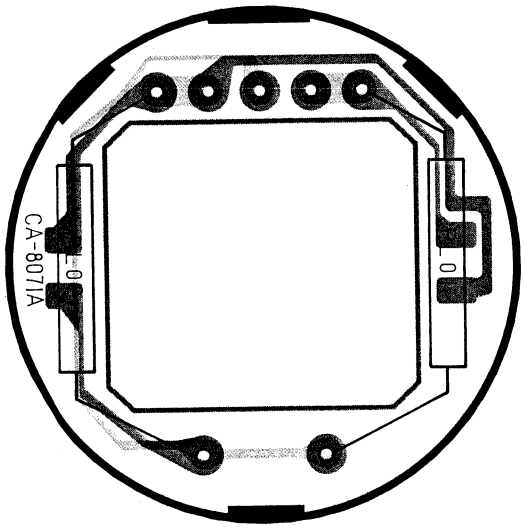
TUBE SIDE



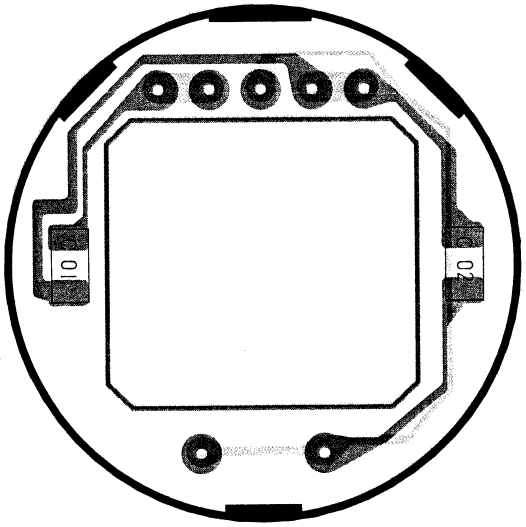
BOTTOM SIDE

23 BOARD DIAGRAM OF BIAS LIGHT BOARD

CAZ-8071A



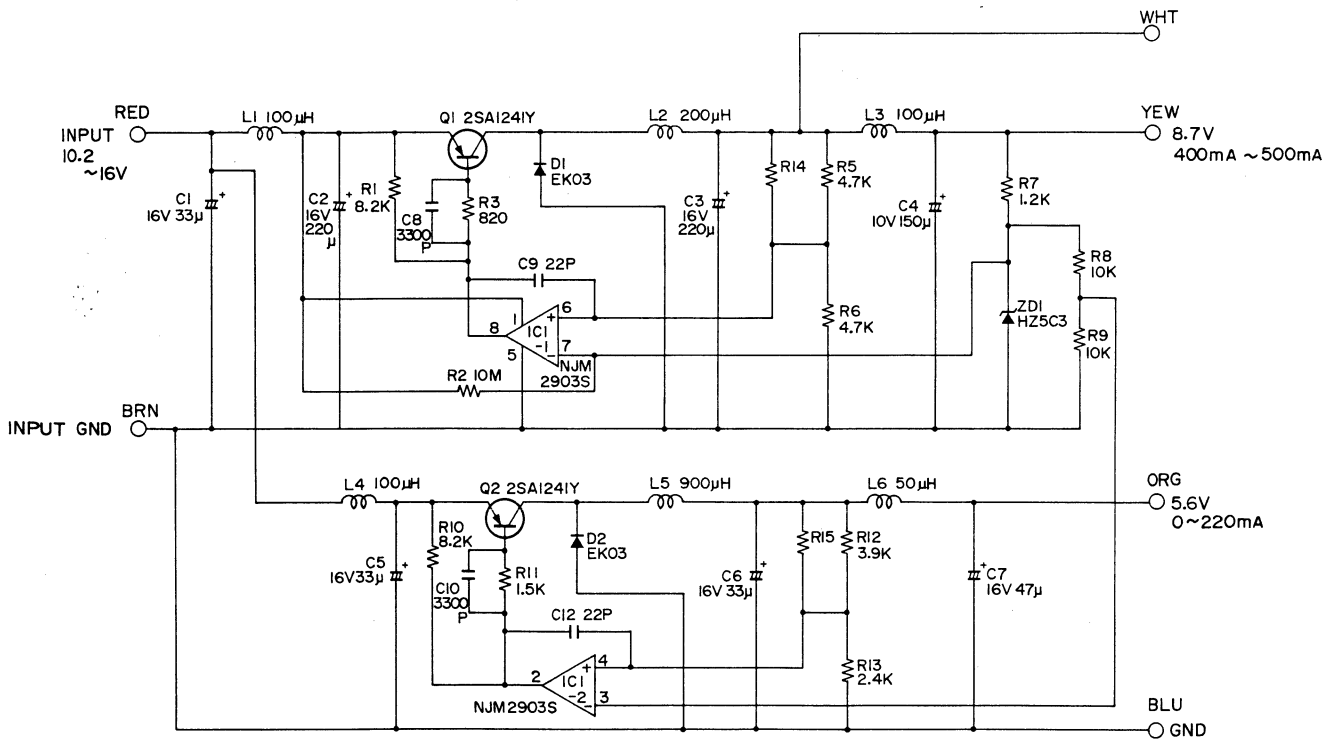
TOP VIEW



BOTTOM VIEW

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

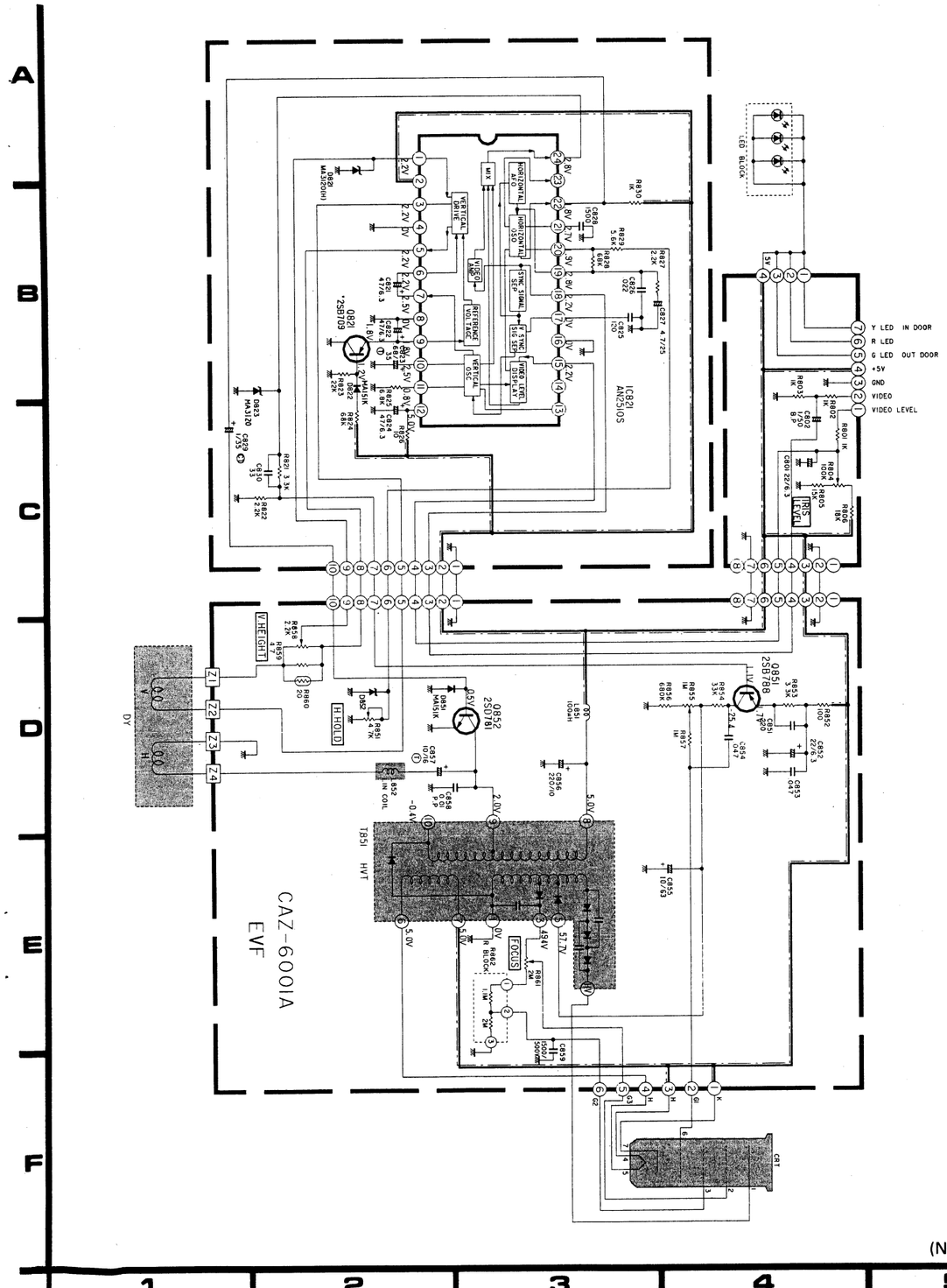
24 CIRCUIT DIAGRAM OF SW.REGULATOR



NOTE: As for the SW. REGULATOR, no individual parts can be supplied.

25-1 CIRCUIT DIAGRAM OF EVF

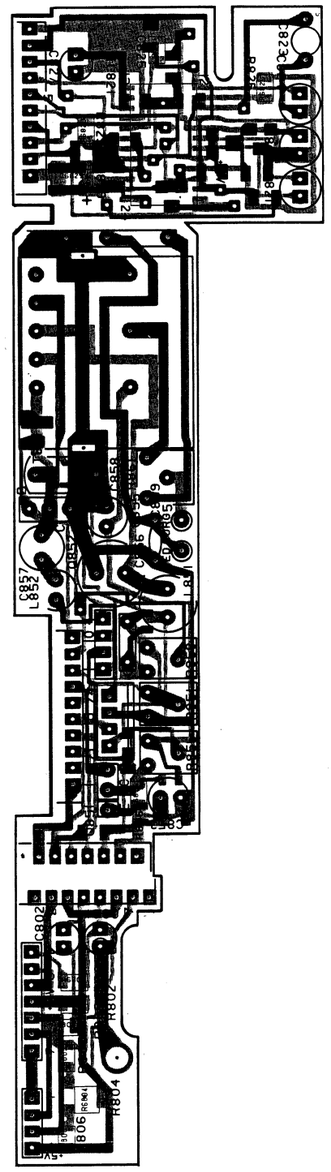
CAZ-6001A



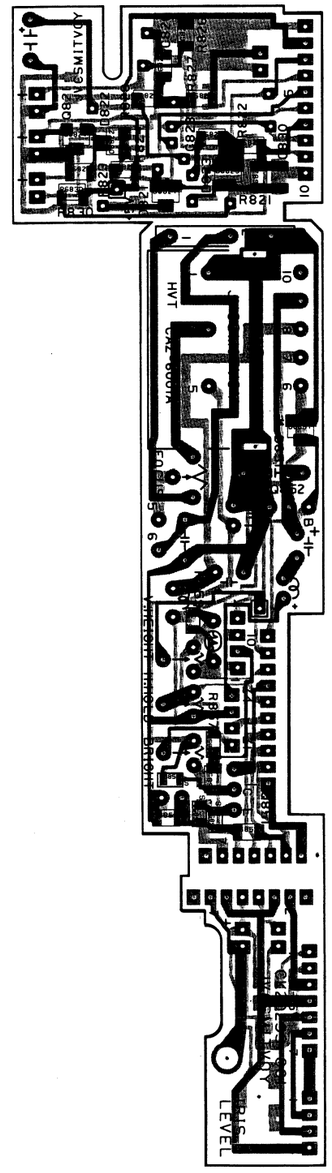
(No. 5660) 29

25-2 BOARD DIAGRAM OF EVF

CAZ-6001A



TOP VIEW



BOTTOM VIEW

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

30 (No. 5660)

26 CIRCUIT DIAGRAM OF (GX-N6U/UT)

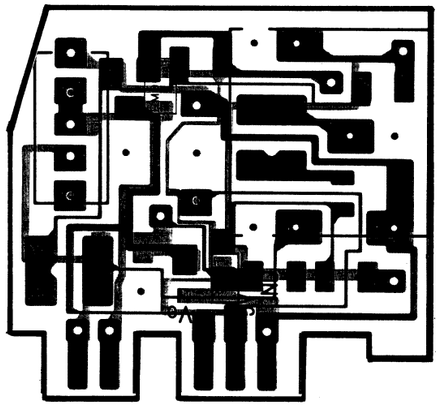
Components of **GX-N6U/UT** differ very little from those of **GX-N8U/UT**.
By referring to the following Table, use the components of **GX-N8U/UT** when they are mutually identical between the two models.

- **Boards employed on GX-N8U/UT and GX-N6U/UT.**

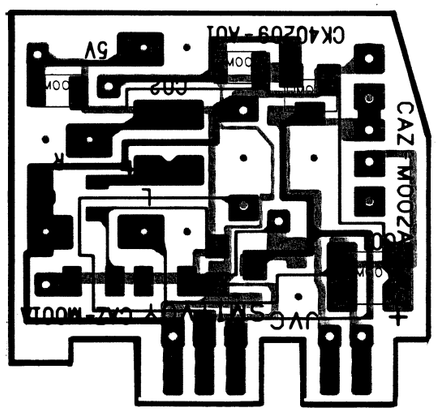
Names of board modules and other components	BOARD NO.		REMARKS
	GX-N8U/UT	GX-N6U/UT	
MOTHER BOARD	CAZ-1001A	CAZ-1002A	
DEF & HV BOARD	CAZ-3001A	CAZ-3002A	
PRE AMP. BOARD	CAZ-2001A	CAZ-2001A	
VTR TRIGGER BOARD	CAZ-9001B/A	CAZ-9001B/A	
AUDIO BOARD	CAZ-A001A	CAZ-A002A	
PRE-PROCESS BOARD	CAZ-B001A	CAZ-B001A	
CARRIER MATRIX BOARD	CAZ-C001A	CAZ-C001A	
DETECTOR BOARD	CAZ-D001A	CAZ-D001A	
BLACK SET BOARD	CAZ-E001A	CAZ-E001A	
COLOR SET BOARD	CAZ-F001A	CAZ-F001A	
CDP BOARD	CAZ-G001A	CAZ-G001A	
AGC BOARD	CAZ-H001A	CAZ-H001A	
ENCODER BOARD	CAZ-J001A	CAZ-J001A	
SSG BOARD	CAZ-K001A	CAZ-K001A	
VTR (IN/OUT) & BATTERY ALARM BOARD	CAZ-L001A	CAZ-L001A	
MIC BOARD	CAZ-M001A	CAZ-M002A	
SW. REGULATOR	CE40687	CE40687	
EVF BOARD	CAZ-6001A	CAZ-6001A	
LENS ASS'Y	CLC04206-A-BFZ	CLK07206-A-B	

27 BOARD DIAGRAM OF MIC BOARD

CAZ-M002A



TOP VIEW



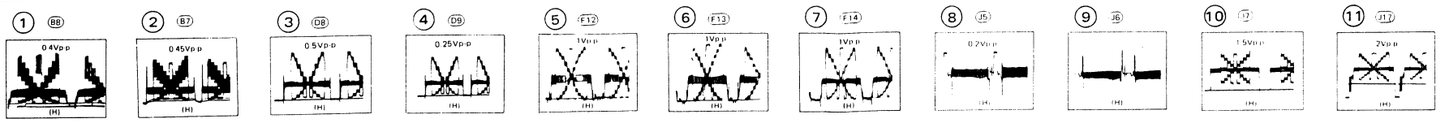
BOTTOM VIEW

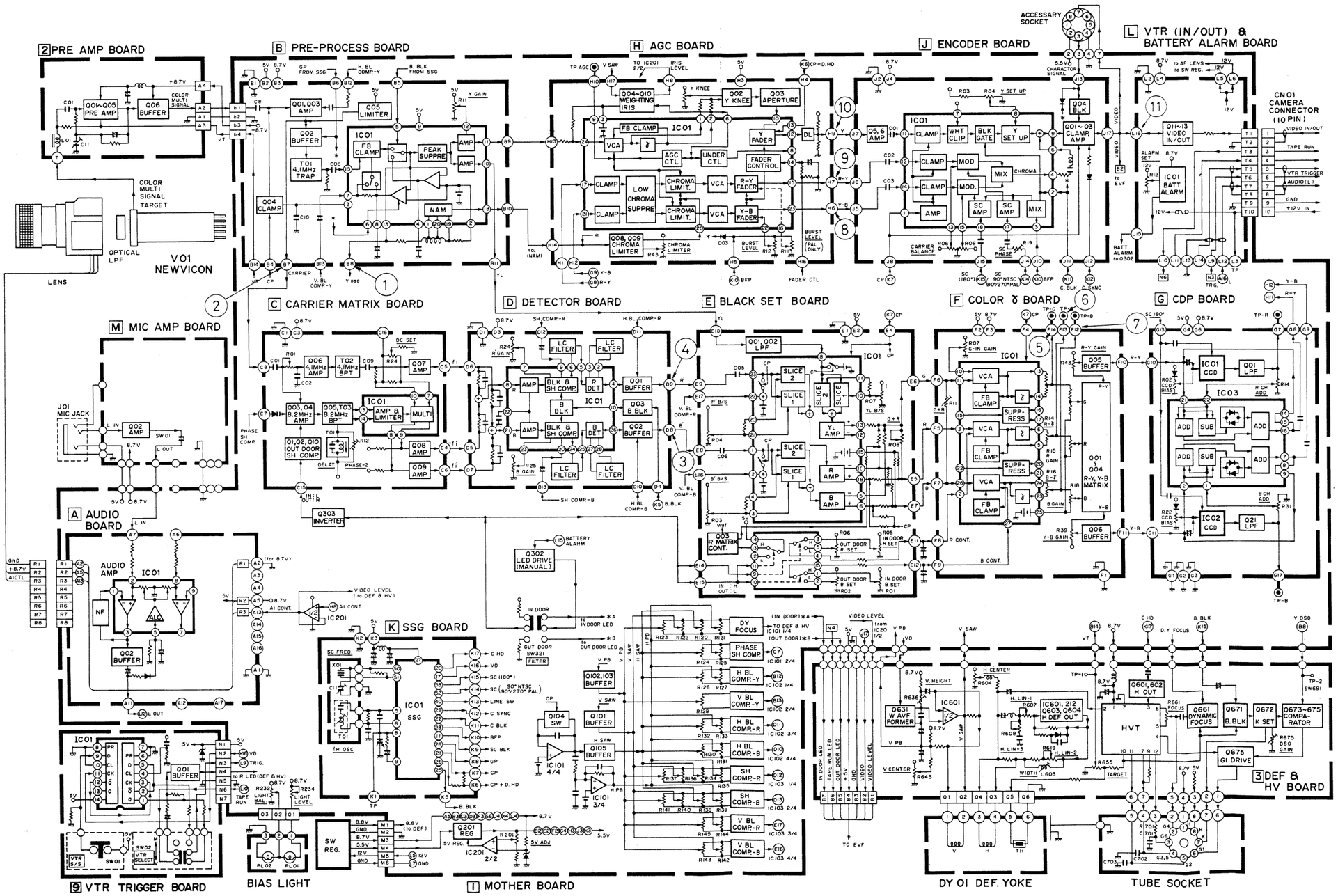
*** As to the circuit diagram, refer to the "Circuit diagram of mothe board (CAZ-1002)."**

Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.

GX-N8U/UT GX-N8U/UT
GX-N6U/UT GX-N6U/UT

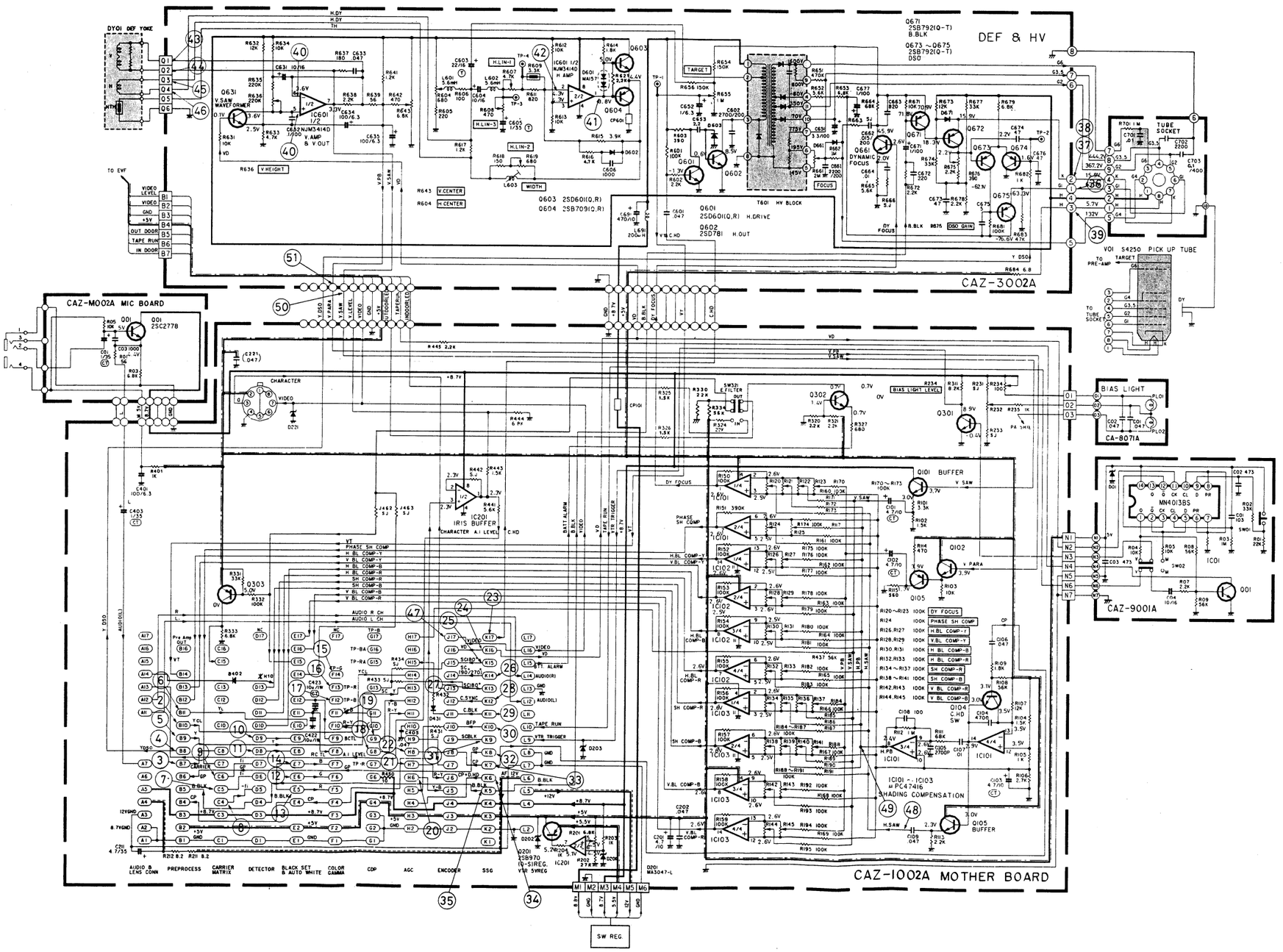
28 BLOCK DIAGRAM OF MAIN CIRCUIT (GX-N6U/UT)

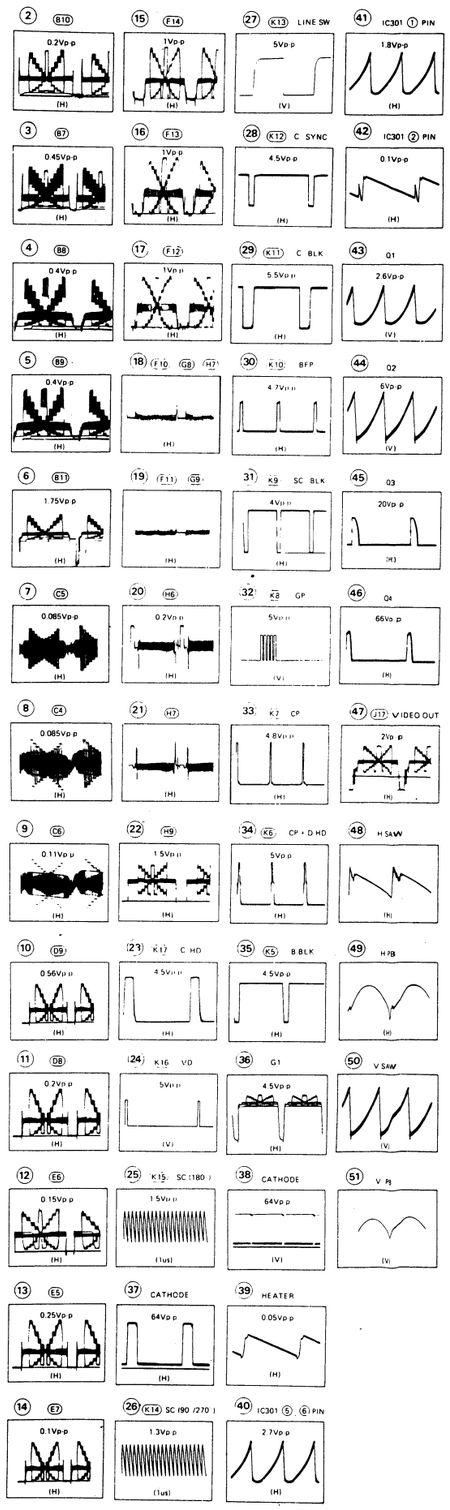




29-1 CIRCUIT DIAGRAM OF MOTHER BOARD (GX-N6U/UT)

CAZ-1002A/CAZ-3002A

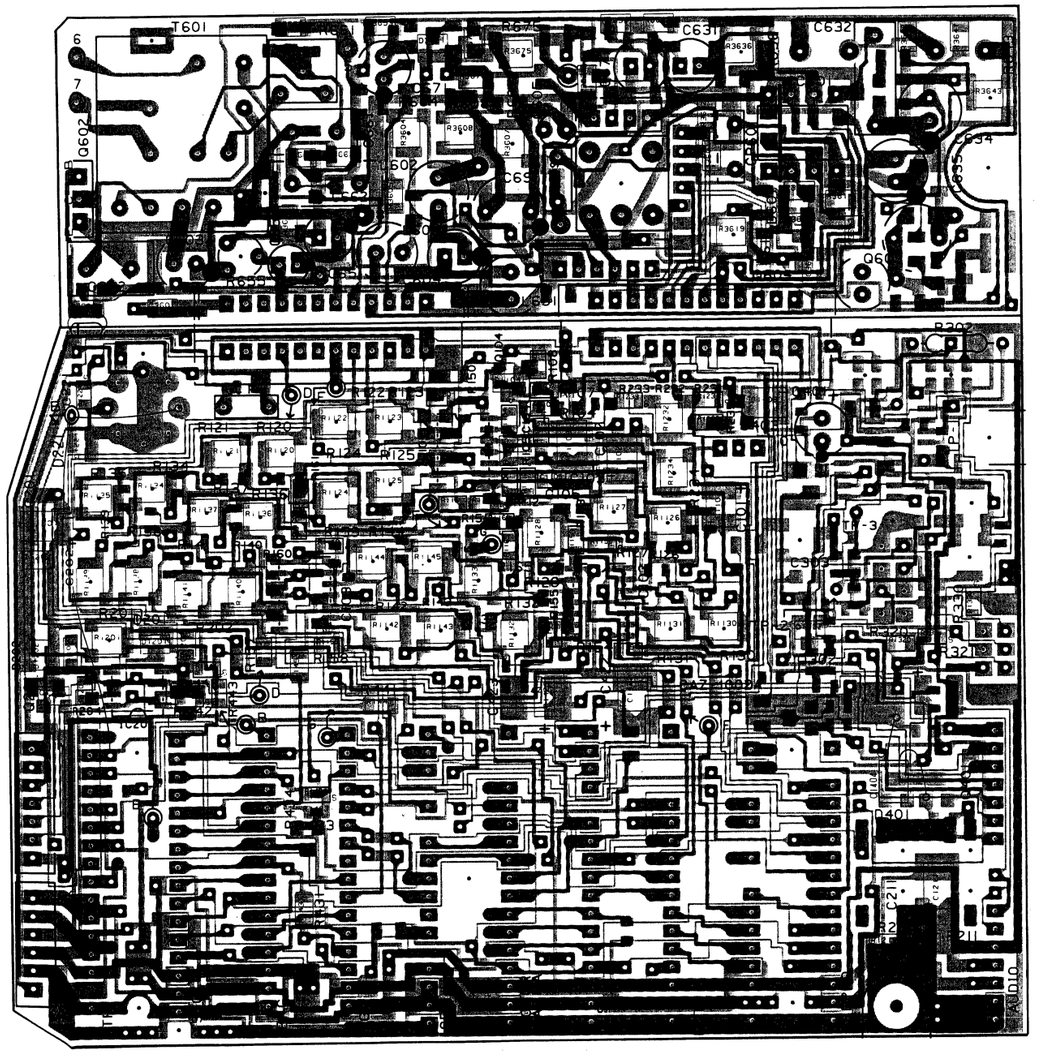



2 B10 0.2Vp-p (H)
15 F14 1Vp-p (H)
27 K13 LINE SW 5Vp-p (V)
41 IC301 ① PIN 1.8Vp-p (H)
3 B7 0.45Vp-p (H)
16 F13 1Vp-p (H)
28 K12 C SYNC 4.5Vp-p (H)
42 IC301 ② PIN 0.1Vp-p (H)
4 B8 0.4Vp-p (H)
17 F12 1Vp-p (H)
29 K11 C BLK 5.5Vp-p (H)
43 Q1 2.6Vp-p (V)
5 B9 0.4Vp-p (H)
18 F10 G8 H7 (H)
30 K10 BFP 4.7Vp-p (H)
44 Q2 6Vp-p (V)
6 B11 1.75Vp-p (H)
19 F11 G9 (H)
31 K9 SC BLK 4Vp-p (H)
45 Q3 20Vp-p (H)
7 C5 0.085Vp-p (H)
20 H6 0.2Vp-p (H)
32 K8 GP 5Vp-p (V)
46 Q4 66Vp-p (H)
8 C4 0.085Vp-p (H)
21 H7 (H)
33 K7 CP 4.8Vp-p (H)
47 J13 VIDEO OUT 2Vp-p (H)
9 C6 0.11Vp-p (H)
22 H9 1.5Vp-p (H)
34 K6 CP + D HD 5Vp-p (H)
48 H SAW (H)
10 D9 0.56Vp-p (H)
23 K17 C HD 4.5Vp-p (H)
35 K5 B.BLK 4.5Vp-p (H)
49 H PB (H)
11 D8 0.2Vp-p (H)
24 K16 VD 5Vp-p (V)
36 G1 4.5Vp-p (H)
50 V SAW (V)
12 E6 0.15Vp-p (H)
25 K15 SC (180) 1.5Vp-p (1us)
38 CATHODE 64Vp-p (V)
51 V PB (V)
13 E5 0.25Vp-p (H)
37 CATHODE 64Vp-p (H)
39 HEATER 0.05Vp-p (H)
14 E7 0.1Vp-p (H)
26 K14 SC (90 /270) 1.3Vp-p (1us)
40 IC301 ⑤ ⑥ PIN 2.7Vp-p (H)

29-2 BOARD DIAGAM OF MOTHER BOARD

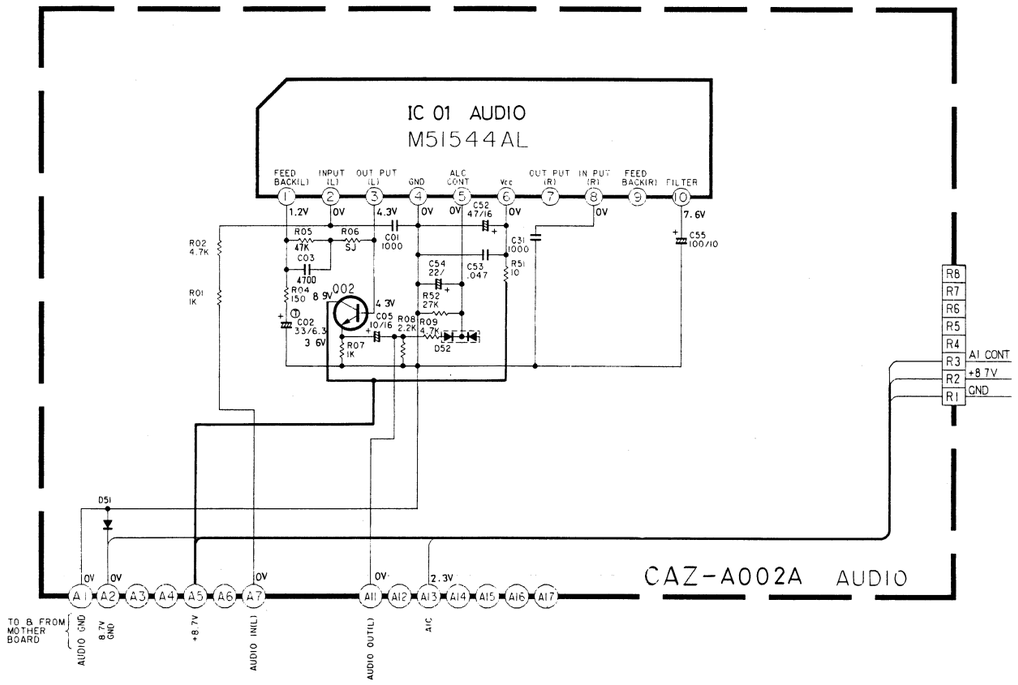
CAZ-1002A/CAZ-3002A

Note: Top side pattern of PC BOARD.
Bottom side pattern of PC BOARD.



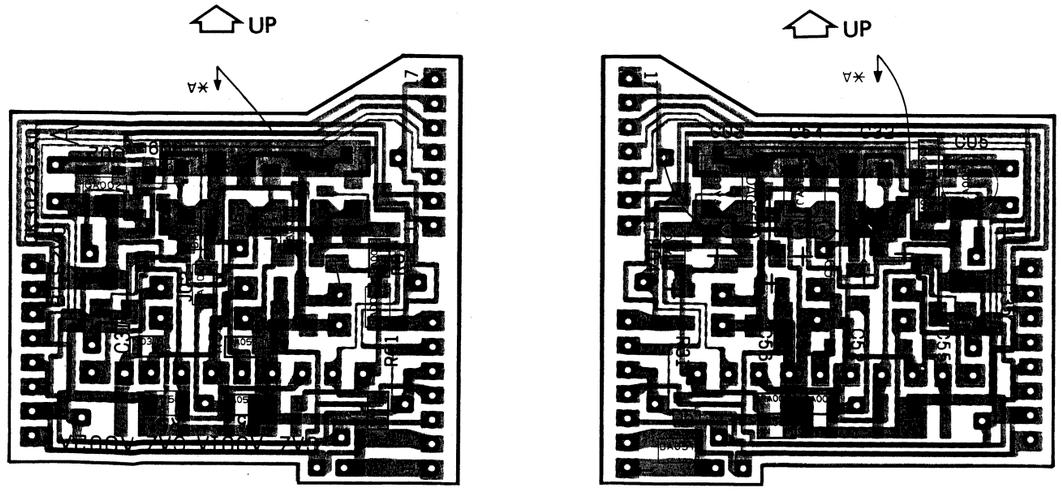
30-1 CIRCUIT DIAGRAM OF AUDIO BOARD Ⓐ

CAZ-A002A



30-2 BOARD DIAGRAM OF AUDIO BOARD Ⓐ

CAZ-A002A



GX-N8U/UT
GX-N6U/UT
PARTS LIST

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GX-N8U/UT No. 5660
GX-N6U/UT
May. 1985

IMPORTANT SAFETY NOTICE:

Components identified by the ⚠ symbol in this parts information have special characteristics for safety.
These critical safety components are designed to "fail safe" under abnormal conditions. The failure of any one component often causes stress in other components which could lead to smoke or fire or other hazards. Because of this, components are selected and tested under actual fault conditions to ensure safe operation. Replacement with anything other than the identical JVC part may present a hazard.

NOTE 1 SUPPLY OF PC BOARD ASS'Y

The parts indicated with — in the Part No. column will not be supplied.

NOTE 2 DECODING OF RESISTOR, CAPACITOR AND TOLERANCE

RESISTOR
All resistance values in ohms
K: 1000 M: 1000000

C R	Carbon Resistor
CH MG R	Chip Metal Glaze Resistor
CH V R	Chip Variable Resistor
MF R	Coating Metal Film Resistor
Comp. R	Composition Resistor
F R	Fusible Resistor
HV R	High Voltage Resistor
LPTC R	Linear Positive Temperature Coefficient Resistor
MF R	Metal Film Resistor
MG R	Metal Glaze Resistor
OM R	Oxide Metal Film Resistor
P R	Plate Resistor
UNF R	Nonflammable Resistor
V R	Variable Resistor

CAPACITOR
Capacitance values in pF or in μF

BP E Cap.	Bi-Polar (or Non-Polar) Electrolytic Capacitor
C Cap.	Ceramic Capacitor
CH AL BP Cap.	Chip Aluminum Bi-Polar Capacitor
CH AL BP E Cap.	Chip Aluminum Bi-Polar Electrolytic Capacitor
CH AL E Cap.	Chip Aluminum Electrolytic Capacitor
CH C Cap.	Chip Ceramic Capacitor
CH Tan. E Cap.	Chip Tantalum Electrolytic Capacitor
E Cap.	Electrolytic Capacitor
E Cap.	Electrolytic Capacitor
M Cap.	Mylar Capacitor
MM Cap.	Metalized Mylar Capacitor
MP Cap.	Metalized Polystyrol
MPP Cap.	Metalized PP Capacitor
PP Cap.	Polypropylene Capacitor
PS Cap.	Polystyrol Capacitor
Tan. Cap.	Tantalum Capacitor

TOLERANCE

F	±1%
G	±2%
J	±5%
K	±10%
M	±20%
N	±30%
H	+50 −10 %
P	+100 −0 %
R	+30 −10 %
Z	+80 −20 %

NOTE 3 HOW TO EXPRESS PARTS NUMBER OF STANDARD PARTS

Presistors and capacitors whose parts number is expressed according to the standed parts as follows are not generally described in the PC Board parts list.
When placing order for service parts, confirm resistance values, rated power, capacitance, rated voltage and type of parts by following the schematic diagram to place order for correct parts number.

1. Carbon resistor (CR) shape of the replacement parts: Straight lead (-⊂⊃-)

Rated power	Parts number	Example of expressing resistance
1/2 W	Q R D 1 2 1 J - ○ ○ ○ S Carbon resistor / Rated power / Shape / Tolerance / Resistance value / Symbol for compact part	2.2 W →2R2
1/4 W	Q R D 1 4 1 J - ○ ○ ○ S	39Ω = 39 × 10⁰ →390
1/6 W	Q R D 1 4 1 J - ○ ○ ○	150Ω = 15 × 10¹ →151
1/8 W 1/8 W	Q R D 1 8 1 J - ○ ○ ○ A Symbol for compact part	6.8kΩ = 68 × 10² →682

2. Composition resistor (Comp. R) shape of replacement parts: Straight lead (-▭-)

Rated power	Parts number	Example of expressing resistance
1 W	Q R C 0 1 1 K - ○ ○ ○ Composition / Rated power / Shape / Tolerance / Resistance	56kΩ = 56 × 10³ →563
1/2 W	Q R C 1 2 1 K - ○ ○ ○	150kΩ = 15 × 10⁴ →154
1/4 W	Q R C 1 4 1 K - ○ ○ ○	1MΩ = 10 × 10⁵ →105

3. Chip metal glazed resistor (CH MG R) shape of replacement parts: Chip (▭)

Rated power	Parts number	Example of expressing resistance
1/4 W	Q R S 1 4 8 J - ○ ○ ○ Metal glazed resistor / Rated power / Shape / Tolerance / Resistance	39kΩ = 39 × 10³ →393
1/10 W	Q R S A 0 8 J - ○ ○ ○	240kΩ = 24 × 10⁴ →244

4. Ceramic capacitor (C Cap.) shape of replacement parts: Disk with leads (◌)

Rated power	Parts number	Example of expressing resistance
50 V	Q C R 1 1 H J - ○ ○ ○ Ceramic capacitor / Shape / Rated voltage / Tolerance / Capacitance	5pF (5.0 pF) →5R0
500 V	Q C S 1 1 H J - ○ ○ ○	22pF = 22 × 10⁰ →220

5. Chip ceramic capacitor (CH C Cap.) shape of replacement parts: Chip ( )

Rated power	Parts number	Example of expressing resistance
50 V	Q C S 8 1 H J – ○ ○ ○ Ceramic capacitor / Shape / Rated voltage / Tolerance / Capacitance	22pF = 22×10^1 →221
50 V	Q C Y 8 1 H K – ○ ○ ○	1000pF= 10×10^2 →102

6. Mylar capacitor (M Cap.) shape of replacement parts: Leads in the same direction ( )

Rated power	Parts number	Example of expressing resistance
50 V	Q F M 1 1 H K – ○ ○ ○ Mylar capacitor / Shape / Rated voltage / Tolerance / Capacitance	0.015μF= 15×10^3 →153
100 V	Q F M 4 2 A K – ○ ○ ○	o.12μF = 12×10^4 →124
200 V	Q F M 4 2 D M – ○ ○ ○	1000pF= 10×10^2 →102

7. Electrolytic capacitor (E Cap.) shape of replacement parts: Leads in the same direction ( )
*** The tolerance in capacitance of QET○○□R-○○○ is equal to that of QET○○□M-○○○.**

Rated power	Parts number	Example of expressing resistance
6.3 V	Q E T 4 0 J R – ○ ○ ○ Electrolytic capacitance / Shape / Rated voltage / Tolerance / Capacitance	4.7μF = 47×10^5 →475
10 V	Q E T 4 1 A R – ○ ○ ○	33μ = 47×10^7 →151
16 V	Q E T 4 1 C R – ○ ○ ○	470μ = 47×10^7 →151
25 V	Q E T 4 1 E R – ○ ○ ○	1000μ = 10×10^8 →151
35 V	Q E T 4 1 V R – ○ ○ ○	0.47μ = 47×10^4 →151
50 V	Q E T 4 1 H R – ○ ○ ○	1μ = 10×10^5 →151
63 V	Q E T 4 1 J R – ○ ○ ○	47μ = 47×10^6 →151
100 V	Q E T 4 1 A R – ○ ○ ○	220μ = 22×10^7 →151
160 V	Q E T 4 1 C R – ○ ○ ○	2.2μ = 22×10^5 →151
250 V	Q E T 4 1 E R – ○ ○ ○	3.3μ = 33×10^5 →151

GX-N8U/UT, GX-N6U/UT PRINTED CIRCUIT BOARD LIST

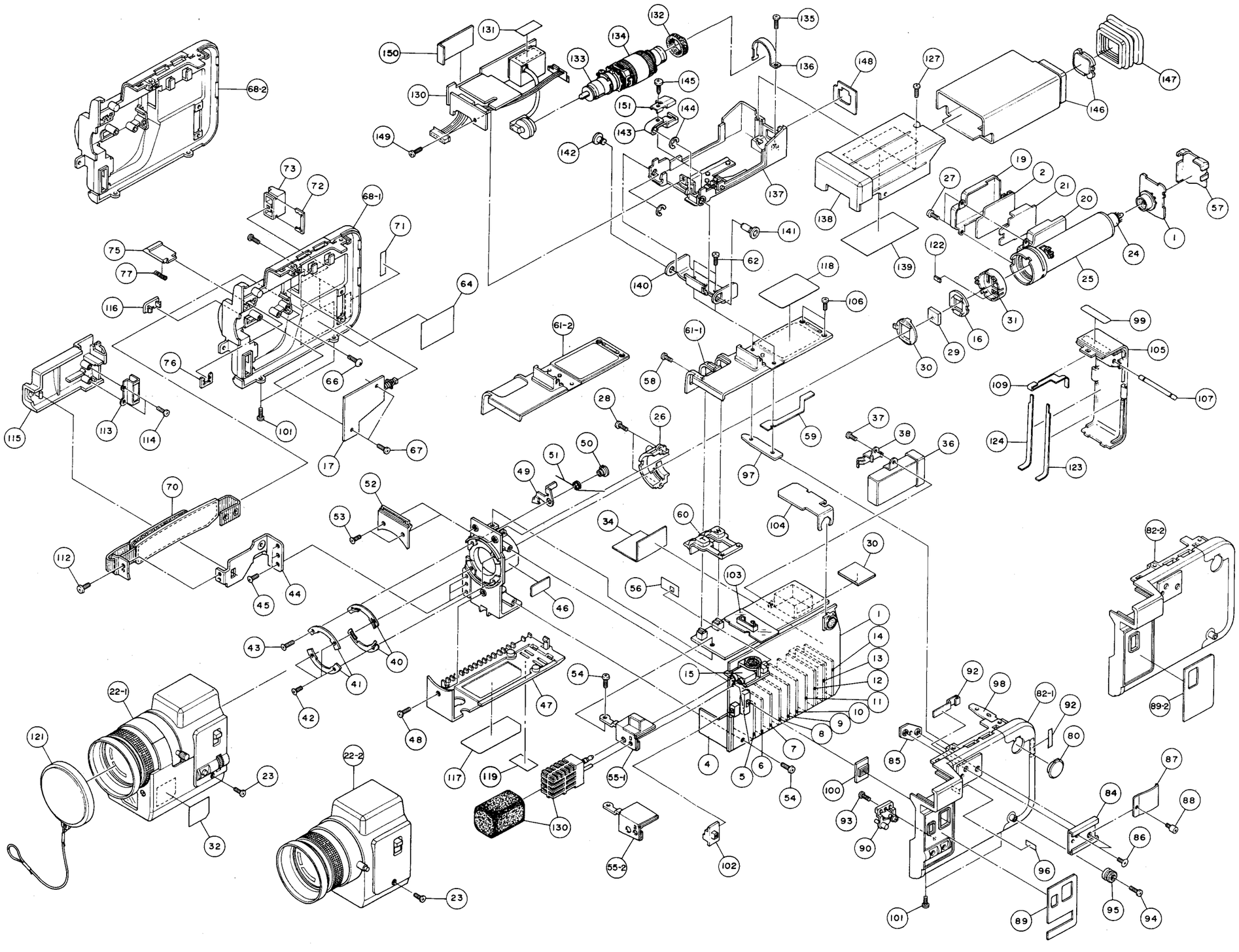
PART NAME	PAT NO.		Interchangeability
	GX-N8U/UT	GX-N6U/UT	
MOTHER BOARD	CAZ-1001A	CAZ-1002A	×
PREAMP BOARD	CAZ-2001A	CAZ-2001A	–
DEF & HV BOARD	CAZ-3001A	CAZ-3002A	×
AUDIO BOARD	CAZ-A001A	CAZ-A002A	×
PREPROCESS BOARD	CAZ-B001A	CAZ-B001A	–
CARRIER MATRIX BOARD	CAZ-C001A	CAZ-C001A	–
DETECTOR BOARD	CAZ-D001A	CAZ-D001A	–
BLACK SET BOARD	CAZ-E001A	CAZ-E001A	–
COLOR GAMMA BOARD	CAZ-F001A	CAZ-F001A	–
CDP BOARD	CAZ-G001A	CAZ-G001A	–
AGC BOARD	CAZ-H001A	CAZ-H001A	–
ENCODER BOARD	CAZ-J001A	CAZ-J001A	–
SSG BOARD	CAZ-K001A	CAZ-K001A	–
VIDEO BOARD	CAZ-L001A	CAZ-L001A	–
MIC BOARD	CAZ-M001A	CAZ-M002A	×
EVF BOARD	CAZ-6001A	CAZ-6001A	–
BIAS LIGHT BOARD	CAZ-8071A	CAZ-8071A	–
VTR BOARD	CAZ-9001B/A	CAZ-9001B/A	–

×: Interchangeability does not exist.

MAIN PART DIFFERENCES BETWEEN GX-N8U/UT AND GX-N6U/UT

Page View No.	PART NAME	PART No.	
		GX-N8U/UT	GX-N6U/UT
1	Mother Board	CAZ-1001A	CAZ-3002A
3	DEF & HV BOARD	CAZ-3001A	CAZ-3002A
4	Audio Board	CAZ-A001A	CAZ-A002A
15	Mic Board	CAZ-M001A	CAZ-M002A
22	Zoom Lens	CLC04206-A-BFZ	CLK07206-A-B
32	AF Plate	CM31546-A01	–
55	Mic Cover Ass'y	CM31545-00A	CM31539-011
56	Blind Rubber	CM42795-A01	–
60	Zoom Knob (A)	CM20745-001	–
61	Top Cover	CM20722-001-M0	CM20722-002-M0
68	Body Cover-L-Ass'y	N8U-BCL	N6U-BCL
82	Body Cover-R-Ass'y	N8U-BCR	N6U-BCR
89	Control Plate	CM31548-001	CM31552-001
90	Push Knob	CM31553-001	–
96	Mic Label	CM42454-A01	–
100	Slide Knob Ass'y	CM43018-00A	–
102	Slide Knob (B)	CM43019-001	–
102	Manual FIL Knob	–	CM43039-001
117	Name Plate	CM31635-A01	CM31635-A02
122	Mic	CE40968-00D	CE40705-00D

EXPLODED VIEW OF CAMERA BODY



SYSTEM ASSEMBLY REPLACEMENT PARTS LIST

VIEW NO.	SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
1		⚠	—	MOTHER BOARD	CAZ-1001A For GX-N8U/UT
1		⚠	—	MOTHER BOARD	CAZ-1002A For GX-N6U/UT
2		⚠	CAZ-2001A	PREAMP BOARD	
3		⚠	CAZ-3001A	DEF & HV BOARD	For GX-N8U/UT
3		⚠	CAZ-3002A	DEF & HV BOARD	For GX-N6U/UT
4		⚠	CAZ-A001A	AUDIO BOARD	For GX-N8U/UT
4		⚠	CAZ-A002A	AUDIO BOARD	For GX-N6U/UT
5		⚠	CAZ-B001A	PREPROCESS BOARD	
6		⚠	CAZ-C001A	CARR. MAT BOARD	
7		⚠	CAZ-D001A	DETECTOR BOARD	
8		⚠	CAZ-E001A	BLACK SET BOARD	
9		⚠	CAZ-F001A	COLOR γ BOARD	
10		⚠	CAZ-G001A	CDP BOARD	
11		⚠	CAZ-H001A	AGC BOARD	
12		⚠	CAZ-J001A	ENCODER BOARD	
13		⚠	CAZ-K001A	SSG BOARD	
14		⚠	CAZ-L001A	VIDEO BOARD	
15		⚠	CAZ-M001A	MIC BOARD	For GX-N8U/UT
15		⚠	CAZ-M002A	MIC BOARD	For GX-N6U/UT
16		⚠	CA-8071A	BIAS LIGHT BOARD	
17		⚠	CAZ-9001B	VTR BOARD	at first CAZ9001A
19			CM31200-001	SHIELD COVER	
20			CM31201-00A	SHIELD CASE	
21			CM42485-001	P. AMP. INSULATOR	
22-1			CLC04206-A-BFZ	ZOOM LENS	For GX-N8U/UT
22-2			CLC07206-A-B	ZOOM LENS	For GX-N6U/UT
			DA7-0692-002	LENS HOOD	Included Zoom Lens (View No. 22-1, 22-2)
23			SPSJ2040M	MINI SCREW	For fastening the Lens Side Cover
24	V01		S4250	PICKUP TUBE	1/2" Newvicon
25	DY01	⚠	CE40688-B0A	DEF YOKE	
26			CM31196-001	DY HOLDER	
27			SPSP2603Z	SCREW	× 2 For Fastening the Preamp Board
28			SPSP2606Z	SCREW	× 2 For Fastening the DY Holder
29			CJ39625-A0B	L P FILTER ASS'Y	
30			CM20531-001	LIGHT GUIDE	
31			CM20532-001	LPF HOLDER	
32			CM31546-A01	AF PLATE	GX-N8U/UT only
33			C40924	CAUTION LABEL	
34		⚠	CM42691-00A	SHIELD INSULATOR	
35		⚠	CM42860-00A	AL INSULATOR	
36			CE40687-A0B	SW REGULATOR	
37			SPSK2030M	MINI SCREW	For Fastening the SW Regulator
38			CM43071-A01	EARTH SPRING	
39			CM10320-D0A	CHASSIS	
40			CM42434-002	MOUNT SPRING	× 2
41			CM42433-001	MOUNT PLATE	× 2
42			SSEK2045	MINI SCREW	× 3 For Fastening the Grip Bracket
43			SSEK2070	MINI SCREW	
44			CM31240-C02	GRIP BRACKET	
45			SHSK2040M	SCREW	
46			CM40442-003	INSULATER	
47			CM20723-00A-M0	BOTTOM BASE ASS'Y	
48			SPSK2050M	MINI SCREW	For Fastening the Bottom Base Ass'y
49			CM43020-A01	LENS LOCK LEVER	
50			CM43021-001	LENS LOCK NUT	
51			CM43022-B01	LENS LOCK SPRING	
52			CM43014-A01-M0	FRONT COVER	
53			SPSK2050M	MINI SCREW	× 2 For Fastening the Front Cover

VIEW NO.	SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
54			SPSP2606Z	SCREW	x 3 For Fastening the Mother Board
55		⚠	CM31545-00A	MIC COVER ASS'Y	For GX-N8U/UT
55			CM31539-011	MIC COVER	For GX-N6U/UT
56			CM42795-A01	BLIND RUBBER	GX-N8U/UT only
57			CM43036-A01	SOCKET INSULATOR	
58			SPSK2050M	MINI SCREW	For Fastening the Top Cover
59			CM43072-001	EARTH FOIL-T	
60			CM20745-001	ZOOM KNOB (A)	GX-N8U/UT only
61		⚠	CM20722-001-M0	TOP COVER	For GX-N8U/UT
61		⚠	CM20722-002-M0	TOP COVER	For GX-N6U/UT
62			SPSK2050M	MINI SCREW	x 2 For Fastening the EVF Holder
64			C41632-5	CAUTION LABEL	x 2 For Fastening the Belt Ass'y
66			SBSB2606Z	TAP SCREW	x 2 For Fastenign the VTR Board
67			SPSN2050R	MINI SCREW	
68-1		⚠	N8U-BCL	BODYCOVER-L-ASS'Y	Left side, For GX-N8U/UT
68-2		⚠	N6U-BCL	BODYCOVER-L-ASS'Y	Left side, For GX-N6U/UT
70			CM31211-00C	BELT ASS'Y	
71			CM40869-001	CAUTION LABEL	
72			CM42498-001	KNOB LOCK	
73			CM43016-001	VTR KNOB	
75			CM31548-001	LENS LOCK KNOB	
76			CM43024-001	LENS KNOB LOCK	
77			CM43023-001	LOCK KNOB SPIRNG	
79			SPSK2050M	MINI SCREW	x 2 For Fastening the Body Cover-L-Ass'y
80			CM43035-A01	SOCKET CAP	
82-1		⚠	N8U-BCR	BODYCOVER-R-ASS'Y	Right Side, For GX-N8U/UT
82-2		⚠	N6U-BCR	BODYCOVER-R-ASS'Y	Right Side, For GX-N6U/UT
84			CM42443-A01	ACCESSORY SHOE	
85			CM42473-A01	PLATE NUT-S	
86			SSEP2604	SCREW	x 2 For Fasteningthe Shoe Spirng
87			CM42442-001	SHOE SPRING	
88			CM42444-001	SHOE SCREW	
89-1			CM31548-001	CONTROL PLATE	For GX-N8U/UT
89-2			CM31552-001	CONTROL PLATE	For GX-N6U/UT
90			CM31553-001	PUSH KNOB	GX-N8U/UT only
92			CM40869-001	CAUTION LABEL	
93			SPSN2040M	MINI SCREW	GX-N8U/UT only For Fastening the Push Knob
94			SPSN2050R	MINI SCREW	For Fastening the CG Hook
95			CM42503-001	CG HOOK	
96			CM42454-A01	MIC LABEL	GX-N8U/UT only
97			CM43031-001	PLATE NUT	
98			CM43032-001	PLATE NUT	
99			CM40868-003	CAUTION LABEL	
100			CM43018-00A	SLIDE KNOB ASS'Y	GX-N8U/UT only
101			SPSK2050M	MINI SCREW	x 4 For Fastening the Body Cover
102			CM43019-A01	SLIDE KNOB (B)	For GX-N8U/UT
103		⚠	CM43037-A01	TOP INSULATOR-F	
104		⚠	CM43038-A01	TOP INSULATOR-R	
105		⚠	CM31504-001-M0	REAR COVER	
106			SPSK2050M	MINI SCREW	x 2 For Fastenig the Rear Cover
107			CM43033-001	BELT SHAFT	
109			CM43075-A01	EARTH FOIL-R	

VIEW NO.	SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
112			SDSP2606M	SCREW	For Fastenign the Belt Ass'y
113			CM43034-001	SOCKET HOLDER	
114			SPSN2040M	MINI SCREW	x 2 For Fastening the Socket Holder
115			CM31541-001	GRIP COVER	
116			CM43017-001	VTR SW CAP	
117			CM31635-A01	NAME PLATE	For GX-N8U/UT
117			CM31635-A02	NAME PLATE	For GX-N6U/UT
118			C41775-10	CAUTION LABEL	
119			C41777	UL LABEL	
120			CM42957-00A	LENS CAP ASS'Y	With String
121			CE40698-00D	STEREO MIC	For GX-N8U/UT
121			CE40705-00D	MIC	For GX-N6U/UT
122			CM40992-010	CUSHION	
123			CM43230-001	EARTH FOIL-C	
124			CM43230-002	EARTH FOIL-C	
130		⚠	—	EVF BOARD	CAZ-6001A
131			CM42715-001	CAUTION LABEL	
132			M01JGU9WG	CRT RUBBER	
133	V02	⚠	CE40827-00A	PICTURE TUBE	1/2" B/W
134	DY02	⚠	CE40827-00A	DEF YOKE ASS'Y	
135			SPSN2060M	MINI SCREW	x 2 For Fastening the DY Ass'y
136			CM43040-001	CRT BAND	
137		⚠	CM31639-00A-M0	EVF BOTTOM ASS'Y	
138		⚠	CM10468-001-M0	EVF COVER-T	
139			CM40100-005	CAUTION LABEL	
140			CM43295-001	EVF HOLDER	
141			CM43000-001	ROTARY SHAFT	
142			CM43000-002	ROTARY SHAFT	
143			CM42999-001	BREAKE SHOE	
144			REE3200	E RING	x 2
145			SDSA2606Z	TAP SCREW	For Fastening the Breake Shoe & Knob Cover
146		⚠	CM31574-00A	SLIDE COVER ASS'Y	
147			CM31533-001	EYE CUP	
148			CM43155-001	BLIND SHEET	
149			SPSK2050M	MINI SCREW	For Fastening the EVF Board
150			CM43293-001	INSULATOR	
151			CM43232-001	KNOB COVER	

1. CAZ-1001A/CAZ-1002A MOTHER BOARD

CAZ-1001A is used in GX-N8U/UT and CAZ-1002A is used in GX-N6U/UT.

1-1. CAZ-1001A MOTHER BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R1120	CE40412-104WYA	CHIP V. RESISTOR	100kΩ DY FOCUS
R1121	CE40412-104WYA	CHIP V. RESISTOR	100kΩ DY FOCUS
R1122	CE40412-104WYA	CHIP V. RESISTOR	100kΩ DY FOCUS
R1123	CE40412-104WYA	CHIP V. RESISTOR	100kΩ DY FOCUS
R1124	CE40412-104WYA	CHIP V. RESISTOR	100kΩ PHASE SH COMP
R1125	CE40412-104WYA	CHIP V. RESISTOR	100kΩ PHASE SH COMP
R1126	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-Y
R1127	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-Y
R1128	CE40412-104WYA	CHIP V. RESISTOR	100kΩ V. BL COMP-Y
R1130	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-B
R1131	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-B
R1132	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-R
R1133	CE40412-104XYA	CHIP V. RESISTOR	100kΩ H. BL COMP-R
R1134	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-R
R1135	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-R
R1136	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-R
R1137	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-R
R1138	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-B
R1139	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-B
R1140	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-B
R1141	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SH COMP-B
R1142	CE40412-104XYA	CHIP V. RESISTOR	100kΩ V. BL COMP-B
R1143	CE40412-104XYA	CHIP V. RESISTOR	100kΩ V. BL COMP-B
R1144	CE40412-104XYA	CHIP V. RESISTOR	100kΩ V. BL COMP-R
R1145	CE40412-104XYA	CHIP V. RESISTOR	100kΩ V. BL COMP-R
R1201	CE40412-682XYA	CHIP V. RESISTOR	6.8kΩ ADJUST
R1232	CE40412-472WYA	CHIP V. RESISTOR	4.7kΩ BIAS LIGHT BL
R1234	CE40412-101WYA	CHIP V. RESISTOR	100Ω BIAS LIGHT LEV
R1304	CE40412-473XYA	CHIP V. RESISTOR	47kΩ CENTER B AT WB
R1308	CE40412-104XYA	CHIP V. RESISTOR	100kΩ SLOPE AT WB
R1312	CE40412-473WYA	CHIP V. RESISTOR	47kΩ CENTER R AT WB
CAPACITOR			
C1101	CE40713-475XM	CHIP TAN E CAP.	4.7μF 10V M
C1102	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
C1103	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
C1201	CE40713-475XM	CHIP TAN E CAP.	4.7μF 10V M
C1211	CE40036-475WM	CHIP TAN E CAP.	4.7μF 35V M
C1301	CE40036-105WM	CHIP TAN E CAP.	1μF 35V M
C1401	QER40JM-107M	E. CAPACITOR	100μF 6.3V M
C1402	CE40036-105WM	CHIP TAN E CAP.	1μF 35V M
C1403	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
C1404	QEK41JM-335M	E CAP.	3.3μF 63V M
C1405	QCZ0210-473U	M. P. CAPACITOR	0.047μF
C1422	CE40035-106WM	CHIP TAN E CAP.	10μF 16V M
C1423	CE40035-106XM	CHIP TAN E CAP.	10μF 16V M
DIODE			
D1201	MA3047-L-W	CHIP DIODE	
D1202	MA3120 (L-H) -X	CHIP ZENER DIODE	
D1203	MA3120 (L-H) -W	SI. DIODE (ZENER)	
D1221	MA3120 (L-H) -W	SI. DIODE (ZENER)	
D1321	MA151WK-W	CHIP DIODE	
D1401	MA151WA-X	CHIP DIODE	
D1402	1S2473H	SI. DIODE	
TRANSISTOR			
Q1101	2SC2778 (B, C) -X	CHIP TRANSISTOR	
Q1102	2SC2778 (B, C) -X	CHIP TRANSISTOR	
Q1103	2SB709 (P-R) -X	SI. TRANSISTOR	
Q1104	2SC2778 (B, C) -W	SI. TRANSISTOR	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q1105	2SC2778 (B, C) -X	CHIP TRANSISTOR	
Q1201	2SB970 (Q-S) -X	CHIP TRANSISTOR	
Q1301	2SD601 (Q, R) -W	CHIP TRANSISTOR	
Q1302	2SD601 (Q, R) -W	CHIP TRANSISTOR	
Q1303	2SB709 (P-R) -X	SI. TRANSISTOR	
Q1304	2SD601 (Q, R) -W	CHIP TRANSISTOR	
Q1401	2SB709 (P-R) -X	SI. TRANSISTOR	
IC			
IC1101	UPC4741G-X	I. C.	
IC1102	UPC4741G-X	I. C.	
IC1103	UPC4741G-X	I. C.	
IC1201	UPC4558G-W	I. C.	
IC1301	NJM082M-W	I C	
IC1302	UPC4558G-W	I. C.	
OTHERS			
	CH40324-008	EVF CON BASE	
⚠	CM42607-A01	INSULATOR	X7
	CM41991-001	BTM SPACER	
SW1320	QSS1Z01-C01	SLIDE SWITCH	
SW1321	QSS1B22-C04	SLIDE SWITCH	
SW1331	QSP1A11-C01	PUSH SWITCH	
SW1401	QSP1A11-C01	PUSH SWITCH	

1-2. DIFFERENCE BETWEEN CAZ-1001A AND CAZ-1002A

CAZ-1001A and CAZ-1002A are not interchangeable with each other.
In model CAZ-1002A, the Auto White Balance and Power ON/OFF switches are eliminated.

SYMBOL No.	PART No.		PART NAME
	CAZ-1001A	CAZ-1002A	
R1304	CE40412-473YLA	—	CH V R
R1308	CE40412-104XYA	—	CH V R
R1312	CE40412-473WYA	—	CH V R
C1301	CE40036-105WM	—	CH Tan E Cap.
C1402	CE40036-105WM	—	
D1321	MA151WK-W	—	Chip Diode
D1401	MA151WA-X	—	Chip Diode
Q1304	2SD601 (Q, R)	—	Chip Transistor
Q1401	2SB707 (P, R)-X	—	Si Transistor
IC1301	NJM082M-W	—	IC
IC1307	UPC4558G-W	—	IC
SW1320	QSS1Z01-C01	—	Slide Switch
SW1331	QSP1A11-C01	—	Push Switch
SW1401	QSP1A11-C01	—	Push Switch

2. CAZ-A1001A/CAZ-A002A AUDIO BOARD

CAZ-A001A is used in GX-N8U/UT and CAZ-A002A is used in GX-N6U/UT.

2-1. CAZ-A001A AUDIO BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
CA002	CE40034-336WM	CHIP TAN E CAP.	33μF 6.3V M
CA005	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CA032	CE40034-336WM	CHIP TAN E CAP.	33μF 6.3V M
CA035	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CA052	QER41CM-476M	E. CAPACITOR	47μF 16V M
CA054	CE40034-226WM	CHIP TAN E CAP.	22μF 6.3V M
CA055	QEK41AM-107M	E CAP.	100μF 10V M
CA056	QEK41AM-107M	E CAP.	100μF 10V M
DIODE			
DA051	MA151A-W	CHIP DIODE	
DA052	MA151WK-X	CHIP DIODE	
DA053	MA151A-W	CHIP DIODE	
DA055	1S2473H	SI. DIODE	
TRANSISTOR			
QA001	2SC2778 (B, C) -W	SI. TRANSISTOR	
QA002	2SC2778 (B, C) -W	SI. TRANSISTOR	
QA031	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QA032	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QA051	2SC2778 (B, C) -W	SI. TRANSISTOR	
IC			
ICA001	M51544AL	I C	

2-2. DIFFERENCE BETWEEN CAZ-A001A AND CAZ-A002A

CAZ-A001A and CAZ-A002A are not interchangeable each other.
The model CAZ-A002A can operate in monaural mode.

SYMBOL No.	PART No.		PART NAME
	CAZ-1001A	CAZ-1002A	
CA032	CE40034-336YM	—	CH Tan E Cap.
CA035	CE40622-106YM	—	CH AL E Cap.
DA053	MA151A-W	—	Chip Diode
QA001	2SC2778(B, C)-W	—	Si Transistor
QA031	2SC2778(B, C)-X	—	Chip Transistor
QA032	2SC2778(B, C)-X	—	Chip Transistor
QA051	2SC2778(B, C)-W	—	Si Transistor

3. CAZ-B001A PREPROCESS BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RB012	CE40848-223YA	CHIP V RESISTOR	22kΩ Y GAIN
CAPACITOR			
CB001	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CB003	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CB004	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
CB012	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
CB013	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
TRANSFORMER			
TB001	CE40723-00A	4.1MHZ TRAP	
DIODE			
DLB001	CE40659-00A	DELAY LINE	
TRANSISTOR			
QB001	2SC2778 (C) -W	CHIP TRANSISTOR	
QB002	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QB003	2SA1022 (B, C) -W	CHIP TRANSISTOR	
QB004	2SC2778 (C) -X	CHIP TRANSISTOR	
QB005	2SB709 (P-R) -X	SI. TRANSISTOR	
IC			
ICB001	M51261P-X	I. C. (M)	
OTHERS			
	CM42607-003	MODULE INSULATOR	

4. CAZ-C001A CARRIER MATRIX BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RC001	CE40848-222YA	CHIP V RESISTOR	2.2kΩ PHASE SET-1
RC012	CE40848-222YA	CHIP V RESISTOR	2.2kΩ PHASE SET-2
RC024	CE40848-103YA	CHIP V RESISTOR	10kΩ DC SET
RC032	ERT-D2FFK251S	THERMISTOR	
CAPACITOR			
CC010	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
CC019	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
TRANSFORMER			
TC001	CE40655-B0A	PHASE TRANSF.	
TC002	CE40653-00A	4.1MHZ BP TRANSF	
TC003	CE40654-00A	8.2MHZ TRAP	
DIODE			
DC001	KV-1236XY	VARICAP DIODE	
TRANSISTOR			
QC001	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC002	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC003	2SC2778 (B, C) -W	SI. TRANSISTOR	
QC004	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC005	2SA1022 (B, C) -W	CHIP TRANSISTOR	
QC006	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC007	2SC2778 (B, C) -W	SI. TRANSISTOR	
QC008	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC009	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QC010	2SC2778 (B, C) -X	CHIP TRANSISTOR	
IC			
ICC001	SN76670 (N)	I. C.	

5. CAZ-D001A DETECTOR BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RD024	CE40848-223YA	CHIP V RESISTOR	22kΩ R GAIN
RD025	CE40848-223YA	CHIP V RESISTOR	22kΩ B GAIN
CAPACITOR			
CD018	QEPA1CM-106M	BP E. CAPACITOR	10μF 16V M
CD019	QEPA1CM-106M	BP E. CAPACITOR	10μF 16V M
COIL			
LD001	CE40344-330YL	CHIP INDUCTOR	33μH
LD002	CE40344-330YL	CHIP INDUCTOR	33μH
LD003	CE40344-820YL	CHIP INDUCTOR	82μH
LD004	CE40344-820YL	CHIP INDUCTOR	82μH
TRANSISTOR			
QD001	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QD002	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QD003	2SB709 (P-R) -X	SI. TRANSISTOR	
IC			
ICD001	HA11748B-X	I. C. (M)	

6. CAZ-E001A BLACK SET BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RE001	CE40848-223YA	CHIP V RESISTOR	22kΩ IN DOOR B SET
RE002	CE40848-223YA	CHIP V RESISTOR	22kΩ OUT DOOR B SET
RE003	CE40848-223YA	CHIP V RESISTOR	22kΩ B BLK SET
RE004	CE40848-223YA	CHIP V RESISTOR	22kΩ R BLK SET
RE005	CE40848-223YA	CHIP V RESISTOR	22kΩ IN DOOR B SET
RE006	CE40848-223YA	CHIP V RESISTOR	22kΩ OUT DOOR B SET
RE007	CE40848-223YA	CHIP V RESISTOR	22kΩ YL BLK SET
RE008	CE40848-224YA	CHIP V RESISTOR	220kΩ G+R
CAPACITOR			
CE008	CE40034-685WM	CHIP TAN E CAP.	6.8μF 6.3V M
CE009	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CE010	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CE011	CE40035-225WM	CHIP TAN E CAP.	2.2μF 16V M
CE021	QCT81CH-220YL	CHIP C CAP.	22pF 16V H
CE024	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
TRANSISTOR			
QE001	2SB709 (Q-R) -W	CHIP TRANSISTOR	
QE002	2SC2778 (C, D) -X	CHIP TRANSISTOR	
QE004	2SK198 (Q, R) -W	SI. TRANSISTOR	
IC			
ICE001	M51263P-W	I. C. (M)	
ICE002	MN4053BS-W	I C	

7. CAZ-F001A COLOR & BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RF007	CE40848-223YA	CHIP V RESISTOR	22kΩ G IN GAIN
RF011	CE40848-104YA	CHIP V RESISTOR	100kΩ G+B
RF014	CE40848-102YA	CHIP V RESISTOR	1kΩ R-τ
RF015	CE40848-223YA	CHIP V RESISTOR	22kΩ R GAIN
RF016	CE40848-102YA	CHIP V RESISTOR	1kΩ B-τ
RF018	CE40848-223YA	CHIP V RESISTOR	22kΩ B GAIN
RF039	CE40848-103YA	CHIP V RESISTOR	10kΩ Y-B GAIN
RF043	CE40848-103YA	CHIP V RESISTOR	10kΩ R-Y GAIN
CAPACITOR			
CF003	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
CF004	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
CF005	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
CF006	CE40621-226YM	CHIP AL E CAP.	22μF 6.3V M
DIODE			
DF001	MA151A-X	CHIP DIODE	
TRANSISTOR			
QF001	2SC2778 (B, C) -W	SI. TRANSISTOR	
QF002	2SC2778 (B, C) -W	SI. TRANSISTOR	
QF003	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QF004	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QF005	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QF006	2SC2778 (B, C) -X	CHIP TRANSISTOR	
IC			
ICF001	M51264P-X	I. C. (M)	

8. CAZ-G001A CDP BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RG002	CE40848-103YA	CHIP V RESISTOR	10kΩ R-Y CCD BIAS
RG014	CE40848-102YA	CHIP V RESISTOR	1kΩ R ADD LEVEL
RG022	CE40848-103YA	CHIP V RESISTOR	10kΩ Y-B CCD BIAS
RG031	CE40848-102YA	CHIP V RESISTOR	1kΩ B ADD LEVEL
CAPACITOR			
CG001	CE40706-106YM	CHIP AL BP CAP.	10μF 6.3V M
CG013	CE40036-105WM	CHIP TAN E CAP.	1μF 35V M
CG015	CE40706-106YM	CHIP AL BP CAP.	10μF 6.3V M
CG016	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CG021	CE40706-106YM	CHIP AL BP CAP.	10μF 6.3V M
CG027	CE40036-105WM	CHIP TAN E CAP.	1μF 35V M
CG029	CE40706-106YM	CHIP AL BP CAP.	10μF 6.3V M
CG031	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
DIODE			
DG001	MA151WA-W	CHIP DIODE	
TRANSISTOR			
QG001	2SC2778 (B, C) -W	SI. TRANSISTOR	
QG021	2SC2778 (B, C) -X	CHIP TRANSISTOR	
IC			
ICG001	MN8029S	I. C. (M)	
ICG002	MN8029S	I. C. (M)	
ICG003	BA7020F	I. C.	

9. CAZ-H001A AGC BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RJ004	CE40848-222YA	CHIP V RESISTOR	2.2kΩ Y SET UP
RJ006	CE40848-103YA	CHIP V RESISTOR	10kΩ R-Y CARR. BALA
RJ008	CE40848-103YA	CHIP V RESISTOR	10kΩ Y-B CARR. BALA
RJ019	CE40848-332YA	CHIP V RESISTOR	3.3kΩ SC PHASE
CAPACITOR			
CJ009	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CJ015	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CJ020	CE40034-685WM	CHIP TAN E CAP.	6.8μF 6.3V M
COIL			
LJ001	CE40344-101YL	CHIP INDUCTOR	100μH
DIODE			
DJ001	MA151A-W	CHIP DIODE	
DJ002	MA157-X	CHIP DIODE	
DJ003	MA151A-X	CHIP DIODE	
TRANSISTOR			
QJ001	2SC2778 (B, C) -W	SI. TRANSISTOR	
QJ002	2SB709 (Q-R) -X	CHIP TRANSISTOR	
QJ003	2SC2778 (B, C) -W	SI. TRANSISTOR	
QJ004	2SC2778 (B, C) -W	SI. TRANSISTOR	
QJ005	2SC2778 (B, C) -W	SI. TRANSISTOR	
QJ006	2SB709 (Q-R) -W	CHIP TRANSISTOR	
IC			
ICJ001	HA11720MP-W	I. C. (M)	

10. CAZ-J001A ENC BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RH012	CE40848-223YA	CHIP V RESISTOR	22kΩ BURST LEVEL
RH026	CE40848-103YA	CHIP V RESISTOR	10kΩ Y KNEE
RH043	CE40848-223YA	CHIP V RESISTOR	22kΩ CHROMA LIMITER
CAPACITOR			
CH004	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CH007	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CH008	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CH009	CE40623-105YM	CHIP AL E CAP.	1μF 50V M
CH010	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CH014	CE40034-685XM	CHIP TAN E CAP.	6.8μF 6.3V M
CH016	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
COIL			
LH001	CE40344-121YL	CHIP INDUCTOR	120μH
DIODE			
DH002	MA151WK-W	CHIP DIODE	
DH003	MA151K-X	CHIP DIODE	
DLH001	CE40657-B0A	DELAY LINE	
TRANSISTOR			
QH002	2SB709 (P-R) -W	CHIP TRANSISTOR	
QH003	2SC2778 (B, C) -W	SI. TRANSISTOR	
QH004	2SC2778 (B, C) -W	SI. TRANSISTOR	
QH005	2SC2778 (B, C) -X	CHIP TRANSISTOR	
QH006	2SB709 (P-R) -X	SI. TRANSISTOR	
QH007	2SC2778 (B, C) -W	SI. TRANSISTOR	
QH008	2SC2778 (B, C) -W	SI. TRANSISTOR	
QH009	2SC2778 (B, C) -W	SI. TRANSISTOR	
QH010	2SB709 (P-R) -X	SI. TRANSISTOR	
IC			
ICH001	M51262P-X	I C	

11. CAZ-K001A SSG BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
CK001	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CK002	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CK007	CE40676-474YM	CHIP AL BP CAP.	0.47μF 50V M
CK008	QCT81CH-100YLS	CHIP C CAP.	10pF 16V H
CK009	QCT81CH-100YLS	CHIP C CAP.	10pF 16V H
CK010	QCT81CH-7R0YLS	CHIP C CAP.	7pF 16V H
CK011	QAT3110-100A	TRIMMER CAP	10pF
TRANSFORMER			
TK001	CE40658-00A	OSC TRANSF.	
COIL			
LK001	CE40344-101YL	CHIP INDUCTOR	100μH
DIODE			
DK001	1SV68	VARICAP DIODE	
TRANSISTOR			
QK001	2SC2778 (B, C) -X	CHIP TRANSISTOR	
IC			
ICK001	HD61907-X	I. C. (M)	
OTHERS			
	CM42423-001	S S G SHIELD (B)	
	CM42497-00A	INSULATOR	
⚠	CM42585-A01	SSG. INSULATOR B.	
	CM43231-001	SSG SPACER	
XK001	CE40673-00B	14MHZ CRYSTAL	

12. CAZ-L001A VIDEO BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
RL012	CE40412-682WYA	CHIP V. RESISTOR	6.8kΩ BATT. ALARMSET
CAPACITOR			
CL011	CE40622-475YM	CHIP AL E CAP.	4.7μF 16V M
CL021	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
CL041	QER41AM-476M	E. CAPACITOR	47μF 10V M
DIODE			
DL002	RD27E (B4)	SI. DIODE (ZENER)	
DL041	W06A	SI. DIODE	
TRANSISTOR			
QL011	2SD1030 (R) -X	CHIP TRANSISTOR	
QL012	2SC2778 (C, D) -X	CHIP TRANSISTOR	
QL013	2SB709 (P-R) -W	CHIP TRANSISTOR	
IC			
ICL001	M5232L	I. C.	
FUSE			
FL001	QMF51U1-1R25S	FUSE	
OTHERS			
	CM42666-001	EARTH BRACKET	
	CH40323-A10	CAMERA CON BASE	
	A44594-002	FUSE CLIP	X2

13. CAZ-M001A/CAZ-M002A MIC BOARD

CAZ-M001A is used in GX-N8U/UT and CAZ-M002A is used in GX-N6U/UT.

13-1. CAZ-M001A MIC BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
CM001	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
CM002	CE40036-105WM	CHIP TAN E CAP.	1μF 35V M
TRANSISTOR			
QM001	2SC2778 (B, C) -W	SI. TRANSISTOR	
QM002	2SC2778 (B, C) -X	CHIP TRANSISTOR	
OTHERS			
	P1109	C D S	
	CM43099-001	SENSER PLATE	
	CM31649-00A	FILTER ASSY	
JM001	PU55585	MIC JACK	
SWM001	QSS1B12-C01	SWITCH	

13-2. DIFFERENCE BETWEEN CAZ-M001A AND M002A

CAZ-M001A and CAZ-M002A are not interchangeable each other.
The model CAZ-M002A can operate in monaural mode.

SYMBOL No.	PART No.		PART NAME
	CAZ-M001A	CAZ-M002A	
CM002	CE40036-105WM	—	CH Tan E Cap.
QM002	2SC2778 (B, C)-X	—	Chip Transistor
SWM001	QSS1B12-C01	—	Switch
	P1109	—	CDS
	CM43099-001	—	Sensor Plate
	CM31644-00A	—	Filter Ass'y

14. CAZ-2001A PREAMP BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
C2001	QCZ0210-473U	MP. CAP.	0.047μF
C2002	CE40034-336XM	CHIP TAN E CAP.	33μF 6.3V M
C2003	CE40034-336XM	CHIP TAN E CAP.	33μF 6.3V M
C2004	CE40034-336WM	CHIP TAN E CAP.	33μF 6.3V M
C2006	CE40713-475WM	CHIP TAN E CAP.	4.7μF 10V M
C2007	CE40036-474WM	CHIP TAN E CAP.	0.04μF 35V M
C2008	CE40035-106WM	CHIP TAN E CAP.	10μF 16V M
C2011	CE40840-200YWA	CHIP TRIMER CAP	20pF
COIL			
L2001	CJ39609-00A	PERCIVAL COIL	
L2002	CE40344-101YL	CHIP INDUCTOR	100μH
TRANSISTOR			
Q2001	2SK316 (Q) -W	F E T	
Q2002	2SA1022 (C) -W	CHIP TRANSISTOR	
Q2003	2SC2404 (D) -X	CHIP TRANSISTOR	
Q2004	2SC2404 (D) -X	CHIP TRANSISTOR	
Q2005	2SC2778 (C) -W	CHIP TRANSISTOR	
Q2006	2SB709 (P-R) -W	CHIP TRANSISTOR	
OTHERS	CH40313-4	ILV CON BASE (H)	

15. CAZ-3001A/CAZ-3002A DEF & HV BOARD

CAZ-3001A is used in GX-N8U/UT and CAZ-3002A is used in GX-N6U/UT.

15-1. CAZ-3001A DEF & HV BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R3604	CE40412-681WYA	CHIP V. RESISTOR	680Ω H. CENTER
R3607	CE40412-472XYA	CHIP V. RESISTOR	4.7kΩ H. LIN 1
R3608	CE40412-101XYA	CHIP V. RESISTOR	100Ω H. LIN 3
R3609	A75575-332	THERMISTOR	3.3kΩ
R3619	CE40412-681XYA	CHIP V. RESISTOR	680Ω H. LIN 2
R3636	CE40685-224WYA	CHIP V RESISTOR	220kΩ V. HEIGHT
R3643	CE40412-682WYA	CHIP V. RESISTOR	6.8kΩ V. CENTER
R3655	CE40461-105A	CHIP V. RESISTOR	1MΩ TARGET
R3661	A76225-205A	V. RESISTOR	2MΩ
R3675	CE40412-222WYA	CHIP V. RESISTOR	2.2kΩ DSO GAIN
CAPACITOR			
C3602	QFP32DG-272S	PP CAP.	2700pF 200V G
C3603	QEE41CK-226B	TAN. CAP.	22μF 16V K
C3605	QEE41VK-105M	TAN. CAP.	1μF 35V K
C3609	QCZ0210-473U	MP. CAP.	0.047μF
C3632	QFH52AJ-104M	MM CAP.	0.1μF 100V J
C3634	QER40JM-107M	E. CAPACITOR	100μF 6.3V M
C3635	QEK40JM-107M	E CAP.	100μF 6.3V M
C3652	QEK41JM-105M	E CAP.	1μF 63V M
C3662	QFH62EK-153M	MM CAP.	0.015μF 250V K
C3701	CJ49511-00A	HV C CAP	
C3702	QCY43AK-222U	C CAP.	2200pF 1000V K
C3703	QFH52GK-104M	MM CAP.	0.1μF 400V K
TRANSFORMER			
T3601	CE40832-00A	H V TRANSF	
COIL			
L3601	A49468-562U	PEAKING COIL	5.6mH
L3602	A49468-562U	PEAKING COIL	5.6mH
L3603	CE40620-00A	WIDTH COIL	
L3691	A49468-201U	PEAKING COIL	200μH
DIODE			
D3601	MA157-W	CHIP DIODE	
D3602	MA151A-X	CHIP DIODE	
D3603	1S2473H-Y	SI. DIODE	
D3661	MA151K-X	CHIP DIODE	
D3671	MA151K-X	CHIP DIODE	
TRANSISTOR			
Q3601	2SB709 (Q-R) -W	CHIP TRANSISTOR	
Q3602	2SD781	SI. TRANSISTOR	
Q3603	2SD601 (Q, R) -X	CHIP TRANSISTOR	
Q3604	2SB709 (P-R) -W	CHIP TRANSISTOR	
Q3631	2SD601 (Q, R) -X	CHIP TRANSISTOR	
Q3661	2SD601A (Q, R) -W	CHIP TRANSISTOR	
Q3671	2SB792 (Q-T) -W	CHIP TRANSISTOR	
Q3672	2SB792 (Q-T) -W	CHIP TRANSISTOR	
Q3673	2SB792 (Q-T) -W	CHIP TRANSISTOR	
Q3674	2SB709 (P-R) -W	CHIP TRANSISTOR	
Q3675	2SB792 (Q-T) -X	CHIP TRANSISTOR	
IC			
IC3601	NJM3414D	I. C.	
OTHERS			
	CE40677-001	1/2 T SOCKET	
SW3691	QSP1B11-C04	PUSH SWITCH	
SW3692	QSP1B11-C04	PUSH SWITCH	

15-2. DIFFERENCE BETWEEN CAZ-3001A AND CAZ-3002A

CAZ-3001A and CAZ-3002A are not interchangeable each other.
In model CAZ-3002A, the Power Zoom unit is eliminated.

SYMBOL No.	PART No.		PART NAME
	CAZ-3001A	CAZ-3002A	
SW3691	QSB1B11	—	Push Switch
SW3692	QSB1B11	—	Push Switch

16. CAZ-6001A EVF BOARD

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R6804	CE40412-104XYA	CHIP V. RESISTOR	100kΩ IRIS LEVEL
R6851	CE40624-472A	V RESISTOR	4.7kΩ H. HOLD
R6855	CE40624-105A	V. RESISTOR	1MΩ BRIGHT
R6858	CE40624-222A	V RESISTOR	2.2kΩ V. HEIGHT
R6860	ERT-D2FEL200S	THERMISTOR	
R6861	A76225-205A	V. RESISTOR	2MΩ FOCUS
R6862	CJ39619-00B	R BLOCK	
CAPACITOR			
C6801	QER40JM-226M	E. CAPACITOR	22μF 6.3V M
C6802	QEPA1HM-105M	BP E. CAPACITOR	1μF 50V M
C6821	QER40JM-476M	E. CAPACITOR	47μF 6.3V M
C6822	QER40JM-476M	E. CAPACITOR	47μF 6.3V M
C6823	QEE51VK-684M	TAN. CAP.	0.68μF 35V K
C6824	QER40JM-476M	E. CAPACITOR	47μF 6.3V M
C6827	QER41EM-475M	E. CAPACITOR	47μF 25V M
C6829	CE40036-105XM	CHIP TAN E CAP.	1μF 35V M
C6852	QER40JM-226M	E. CAPACITOR	22μF 6.3V M
C6855	QETA2AM-105	E CAP.	1μF 100V M
C6856	QEU41AM-227M	E CAP.	220μF 10V M
C6857	QEE41CK-106B	TAN. CAP.	10μF 16V K
C6858	QFP32DG-103S	PP CAP.	0.01μF 200V G
TRANSFORMER			
T6851	CE40826-00A	HV. TRANSF.	
COIL			
L6851	A49468-101U	PEAKING COIL	100μH
L6852	CE40825-00A	LIN COIL	
DIODE			
D6821	MA3120 (L-H) -W	SI. DIODE (ZENER)	
D6822	MA151K-W	CHIP DIODE	
D6823	MA3120 (L-H) -W	SI. DIODE (ZENER)	
D6851	MA151K-W	CHIP DIODE	
TRANSISTOR			
Q6821	2SB709 (P-R) -W	CHIP TRANSISTOR	
Q6851	2SB788 (T)	SI. TRANSISTOR	
Q6852	2SD781	SI. TRANSISTOR	
IC			
IC6821	AN2510S	I. C.	
OTHERS			
	CE40836-00A	LED BLOCK	
	CE40822-00A	SOCKET ASSY	

17. CA-8071A BIAS LIGHT BOARD

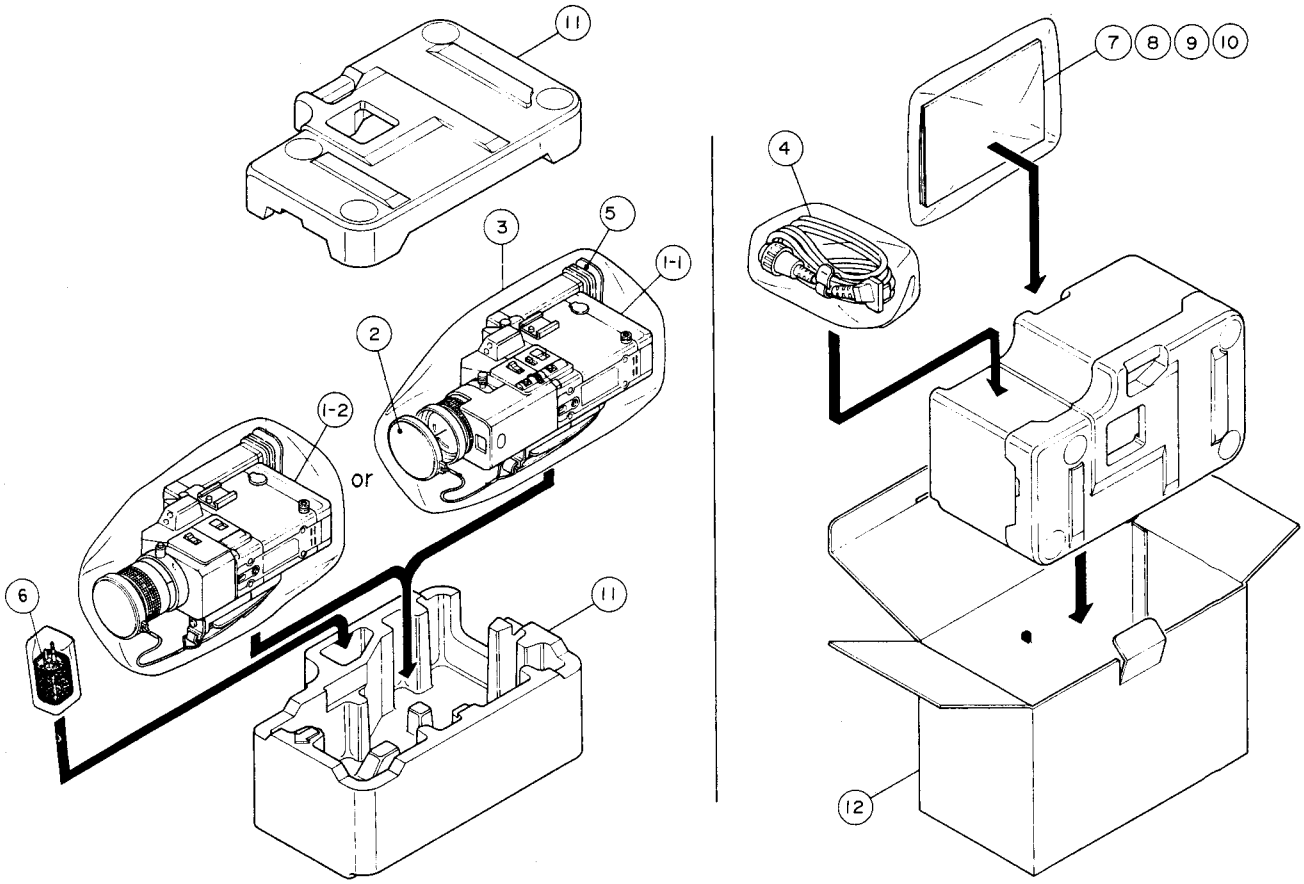
SYMBOL NO.	PART NO.	PART NAME	REMARKS
OTHERS			
PL8001	CE40683-001	PILOT LAMP	
PL8002	CE40683-001	PILOT LAMP	

18. CAZ-9001A/CAZ-9001B VTR BOARD

CAZ-9001A is changed to CAZ-9001B from May 1985 production lots. Interchangeability exist.

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
C9004	CE40622-106YM	CHIP AL E CAP.	10μF 16V M
TRANSISTOR			
Q9001	2SC2778 (B, C) -X	CHIP TRANSISTOR	
IC			
IC9001	MN4013BS-W	I C	
OTHERS			
SW9001	QSP2H12-C01	PUSH SWITCH	Note: CAZ9001A use
SW9002	QSS1B23-C01	SLIDE SWITCH	QSS1A22-C02 (2p)

PACKING



PACKING PARTS LIST

VIEW NO.	SYMBOL NO.	□□	PART NO.	PART NAME	REMARKS
1			——	CAMERA BODY	GX-N8U/UT, N6U/UT
2			CM42957-00A	LENS CAP ASS'Y	
3			CP3004-021	POLY BAG	
4		□□	VC-444-2E	CAMERA CABLE	
5			——	EVF	N8U-EVF
6			CE40698-00D	MIC	STEREO For GX-N8U/UT
6			CE40705-00D	MIC	MONO For GX-N6U/UT
7			GX-N8U-IB-A	INST BOOK	For GX-N8U/UT
7			GX-N6U-IB-A	INST BOOK	For GX-N6U/UT
8			PU33941-3	SAFETY BOOKLET	
9			BT-20062	WARRANTY CORD	
10			SLR-SHEET-A	LENS INFORMATION	
11			CP10443-00A	CUSHION	
12			CP20065-053	PACKING CASE	For GX-N8U/UT
12			CP20065-054	PACKING CASE	For GX-N6U/UT

GX-N8 SERIES LENS

CLC 04206-A-BFZ

GX-N6 SERIES LENS

CLK 07206-A-B

SERVICE MANUAL

- This service manual contains instructions referring principally to the operation check and replacement of parts of the lens unit of the color video camera GX-N8 Series/GX-N6 Series.
- For details about the camera unit of the GX-N8 Series/GX-N6 Series, please refer to the respective service manuals.

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GX-N8/N6 : N o.5660L
Apr. 1985

1. Specification

Focal distance	:	f = 8.5 ~ 51 mm
Zoom ratio	:	6 ×
Max. relative aperture	:	F1.2
Iris	:	Auto iris control (F1.2 ~ approx. F45) Manual iris control GX-N8 Series Lens only (F1.2 ~ c)
Macro mechanism	:	Built-in
Macro nearest distance	:	Approx. 1 cm
Zoom nearest distance	:	Approx. 1 m
Zooming	:	Manual control with zoom lever.
	:	Power control with zoom motor. GX-N8 Series Lens only
Focusing	:	Manual control with focus ring
	:	Automatic adjustment by the semi-TTLA²F method. GX-N8 Series Lens only
Filter aperture	:	46 mm (screw-in type)
Lens mount	:	Special bayonet mount

Design and specifications subject to change without notice.

2. Repair classification, precautions and preparations for service

2-1 Repair classification

(1) When a repair request is received from a customer, first carefully check the camera body in the presence of the customer to see if any flaw or other problem is found on the camera body. Also, make sure what and where repair is necessary together with the customer.

(2) Before requesting the lens manufactuer for repair, carry out the operation check, cleaning, parts replacement, and adjustments according to the instructions given in Items of this Service Manual.

(3) If the required repairs could not be made by taking these steps, or are not covered by this Service Manual, ask the lens manufacturer for repair.
The lens may be irreparable if it was dropped, subjected to shock, submerged in water, or severely corrded by abuse, or if it was disassembled, repaired or modified in a manner not covered by this Service Manual.
If a lens is reparable but takes a long time to repair, the customer should be advised in advance, and be furnished with a substitute where necessary.

(4) Do not disassemble the portions which are not described in this manual. (Otherwise, the optical performance of the camera cannot be guaranteed.) Do not turn screws other than those specifed in the manual.

(5) Lock screws where they were locked.

* Lens manufacturer: Canon

2-2 Working conditions

(1) **Exercise caution to prevent strong light from entering the pickup tube in order to protect the photoconductive film of the pickup tube from permanent sticking (regardless of whether the incident light is forward, backward, or direct, or whether the camera is in operation or not).**

(2) Keep the work room in order and clean.

(3) The desirable work room temperature and humidity are 25°C and 65%.

(4) Use only the specified solvents and tools for repair.

(5) When placing the lens and disassembled parts on the work bench, exercise good care not to let the lens surfaces come into direct contace with the work bench.

(6) Keep the lens clerar of your fingers during repair. If fingerprints are accidentally put on the lens, clean it as mentioned in the manual.

(7) Keep dust and lint from deposition on the lens surface or entering the lens body during disassembly.

(8) Be careful not to lose the parts (screws, etc.) nor to fit them in the wrong place.

(9) Put a rubber mat on the work table to protect the lens surface and the external parts from scratches.

2-3 Chemicals, jigs and tools used on assembling/disassembling

Classification	Name	Note
Solvent	Methanol (methyl alcohol)	To clean external parts (metal and plastic parts)
	Mixed alcohol (Methyl alcohol 6: ether 4)	To clean external parts (metal parts), lens and filter. Keep plastic parts free from this mixture.
Detergent	Neutral detergent (detergent for furniture and housing)	Used to clean the lens body (resin parts). Be sure to use neutral detergent for the painted parts.
Lubricant	Lozoid 72090 Lozoid 1150E Grease GE-X8 Grease GE-C4	
Bonding agent	Bond G103	
	Locking screw 1401B	For locking screws. (Apply from injector.)
	Araldite	Use the "Cemedine High Super" as a substiture.
Tool	Stick, tweezers, pincers, injector, thin brush, polishing paper, cloth, air blower, flourescent light (20W), solder pult, soft brush, rubber bands, No. 0 Philips screwdriver, No. 1 Philips screwdriver, a set of 6 clock screwdrivers. Fine straight-head screwdriver. Universal spanner, Dial tension gauge, Bar-type tension gauge (0 ~ 600g)	● As for screwdriver No. 1, have an oridnary. Philips screwdriver (with a large grip) ready for convenience of work. ● For No. 0 Philips-head screwdriver, a long type one should be also included.
Paint	Luminosign (Yellowish-Orange) Albes-Handwriting N9.5 (White)	For coloring engravings
	Vinyl paint (Black)	For touching up black painted area
Others	Oil stain prevention agent OBF-10	

Note: Avoid using ketone, paint thinner or other solvent when loosening small screws. (Otherwise, plastic portions might be adversely affected by the solution.)
See the Section on "ADJUSTMENT" for equipment and tools required for adjustment.

REPAIR

1. Operation check

	Check Item	Checking Method	Requirements
1	**Focusing (Manual)**	Hold the camera body with one hand and turn the focus ring with the other hand. Check the operation according to the touch.	● Operation must be smooth.
2	**Automatic focusing**	When the auto-focus function is operated, the lens should be able to operate by accompanying the change of fucus.	● The lens should operate by accompanying the change of the subject.
3	**Zooming**	Follow the procedures in **"Item 1"**, holding the zoom in place of the focus ring and turning the zoom ring, and check the operation according to the touch. (Operating range: 51 ⟷ 8.5) Magnification: 6	● Operation must be smooth.
4	**Macro operation of zoom**	Following the Item 1, check the operation according to the touch. (Operating range: 8.5 ⟷ M)	● Macro zone shall work with the zoom lever positioned in macro. ● Operation must be smooth.
5	**Power zoom**	Operate the camera and zoom switch (T or W) to electrically turn zoom ring.	● Zooming in the specified direction. ● Slipage on both T and W sides.
6	**Auto iris operation**	Set the one button auto to "[A]" or "[M]" and monitor the picture while changing the brightness of a subject.	● The picture on the monitor shall be almost stable against brightness change of a subject.
7	**Manual operation of zoom**	With the one button auto set to "[M]", turn the manual knob while monitoring the picture.	● The picture brightness on the monitor should change. ● The iris should follow the specified direction normally.
8	**Iris lock operation**	Push the iris lock switch with the one button auto in position "[A]" or "[M]".	● Releasing the switch shall bring in mode "auto iris operation" or "manual iris operation".

2. Cleaning

2-1 Cleaning the Body

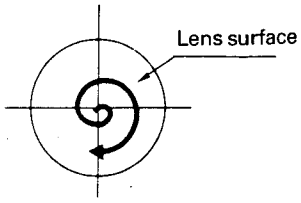
(1) Metal parts
Soak a cloth with a suitable amount of benzine, methanol, or mixed alcohol, and clean dirty parts.

(2) Plastic parts
Used a suitable piece of cloth soaked with an adequate amount of neutral detergent. If stains will not come off, use a suitable piece of cloth soaked with benzine or methanol.

Note: Exercise care to keep alcohol mixture from being applied to the resin part. Do not use alcohol mixture for the painted part, or its surface will be damaged. Be sure to use only neutral detergent.

2-2 Cleaning the lens

(1) Check the extent of soil the lens under a fluorescent light (20W) or natural light before starting to clean. (Be dareful not to let stron light getting into the pickup tube during this operation).
(2) Clean the lens in the following ways:
(See page 4 for the lens cleaning tools).

Dust or lint	Remove by blowing with blower.
● Dust or lint which cannot be blown away ● Fingerprints, oil, etc.	Wipe off dust or oil with a piece of cloth or polishing paper, wrapped around the stick, which has been soaked in a small amount of alcohol mixture. ● Wipe the lens surface from the center of the lens toward the outside in a spiraling manner. 

3. Coloring engravings and touching up black paint

Tools	: thin brush, cloth
Paint	: Luminosign yellowish-ambar, albeshandwriting N9.5 (white), vinyl paint (black)
Cleaning solvent	: Methanol, alcohol mixture, benzine

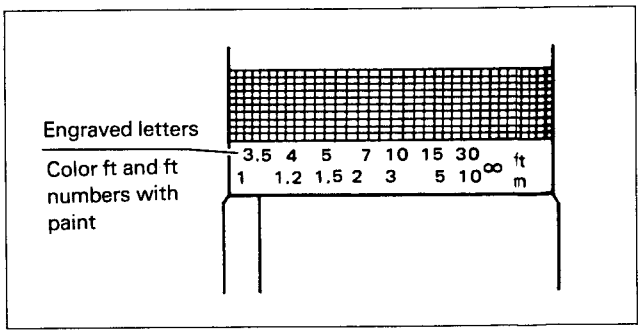


Fig. 3-1 Coloring engravings

3-1 Coloring engraving

(1) Color de engraved letters (ft and ft numbers) with yellowish-ambar Luminosign paint.
(2) Use a thin brush with a stuitable amount of paint to color the engravings.
(3) If the paint accidentally ruins off the engraved marks, wipe it off with a piece of cloth soaked with methanol, alcohol mixture or benzine, after the apint is slightly dry.

Note: Mix and stir the paint sufficiently.

3-2 Touching up the black

(1) Touch up the peeled or scratched areas of the black paint, if these are limited to a minor extent.
Use a thin brush with a small mount of black vinyl paint for this purpose.
(2) If these peels or scratches are serious, forward the lens body to the lens manufacturer for repair.

4. Removing Covers and Printed Circuit Board

(1) Remove screw Ⓐ and pull the lower part of the side cover towards you and pull it out downward. To mount it, match the part marked with * on the top cover and side cover, and tighten screw Ⓐ.
(2) Remove the bottom cover while removing four screws Ⓑ.

Note 1:
Be careful not to catch the lead wire when mounting the bottom cover.

Note 2:
When the bottom cover is dismounted and mounted, make sure to check the precision of the auto focus.

(3) Remove three screws Ⓒ and remove the top cover by pulling it upward.
(4) Remove two screws Ⓓ and the Auto focus Board.
(5) Remove two screws Ⓔ and the Iris drive Board.
(6) Remove two screws Ⓕ and the Power zoom Board.

Note:
Refer to the wiring diagram for connection of the lead wires.

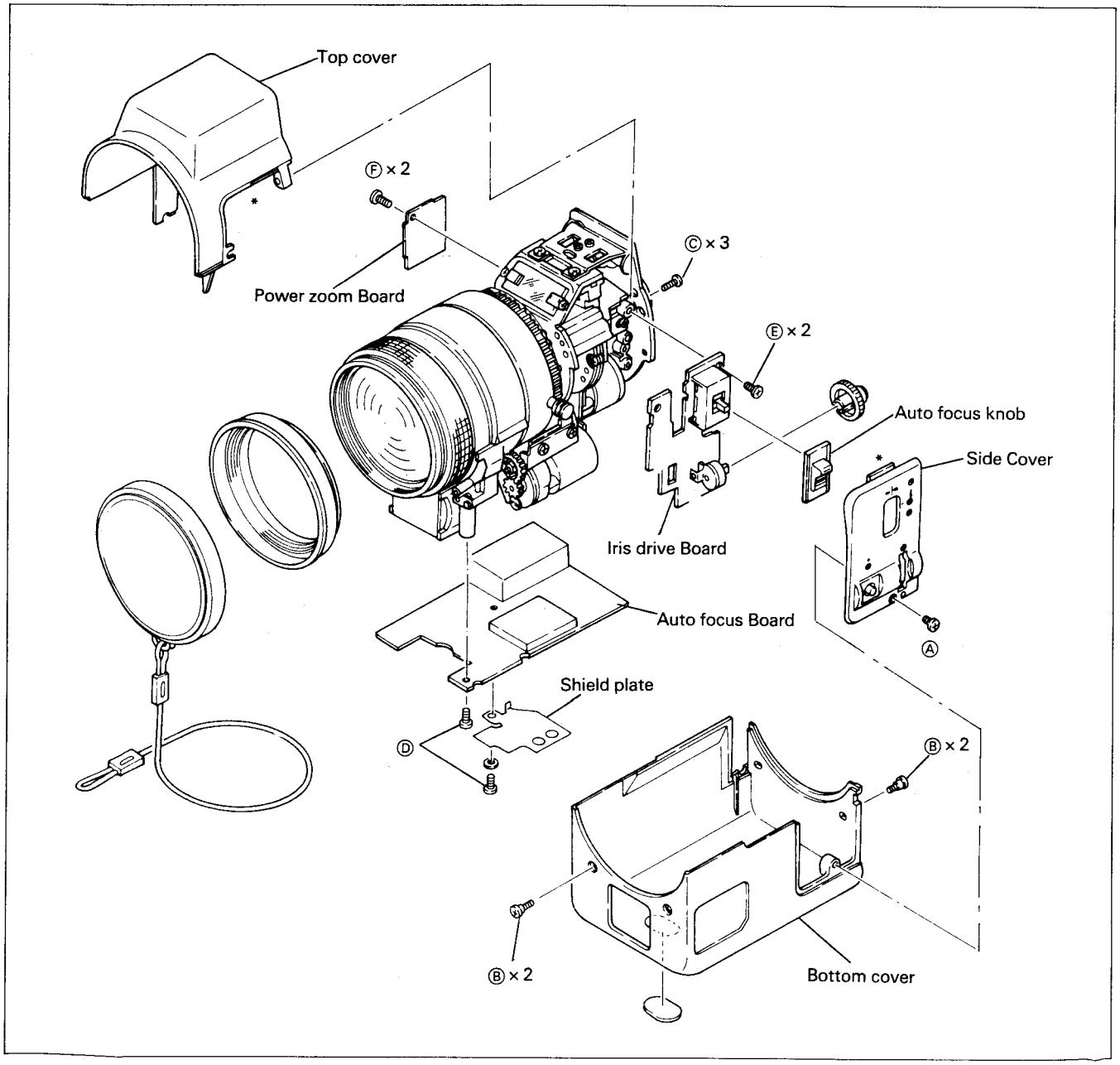


Fig. 4

5. Removing Lens unit, Motor unit and Chassis unit

(1) Remove covers and Printed Circuit board. (Refer to **"4. Removing Covers and Printed Circuit Board"**.)
(2) Remove three screws Ⓐ and the chassis unit. (The screw lock can be easily removed without solvent.)
Make sure to mount a screw lock (blue) on the screw top after mounting.
(3) Remove four screws Ⓑ, and screws Ⓒ and remove the lens unit from the motor unit.

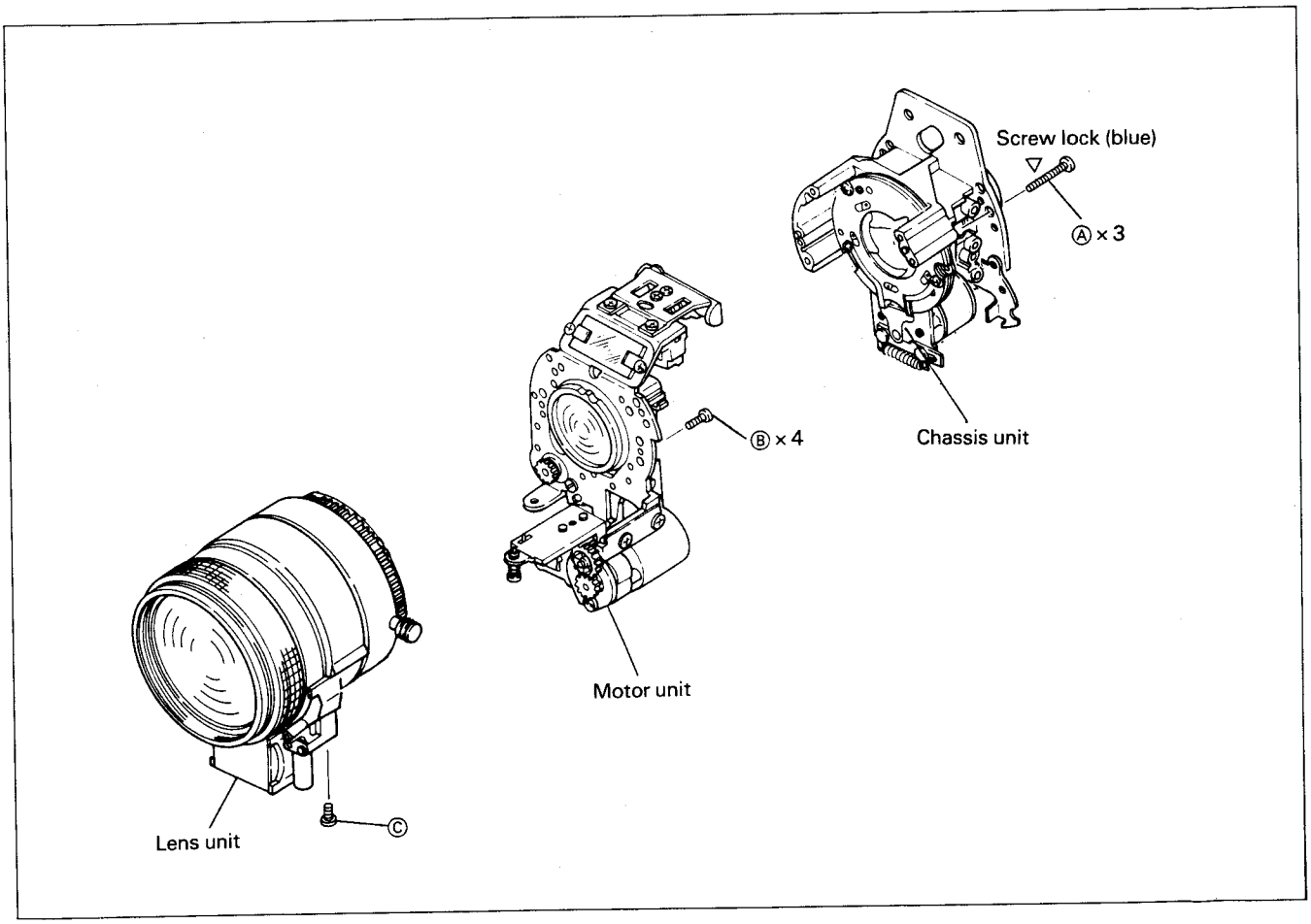


Fig. 5

6. Chassis unit Disassembling

* Remove the chassis unit from the motor unit. (Refer to **"5. Removing Lens unit, Motor unit and Chassis unit"**.)

6-1 Removing and replacing IG meter

(1) Remove two screws Ⓓ and the iris unit.

Note 1:
Refer to the wiring diagram for connection of the lead wire.

Note 2:
When an Iris unit is replaced, **"4. Auto iris adjustment"**.

6-2 Removing relay lens unit

(1) Loosen the relay set screw and pull the relay lens unit out in the forward direction.
(2) When mounting, arrange the components so that the adjusting groove of the relay lens unit is in the center of the adjusting hole and temporarily set with a relay set screw.

Note 1:
Check that no dust is sticking to the relay lens unit before mounting it.

Note 2:
When the relay unit is dismounted/mounted, check and adjust the back focus (zoom tracking).

6-3 Removing Bayonet mount

(1) Remove the relay set screw and four screws Ⓔ and pull out the bayonet mount in the backward direction.
(2) Remove the support metals.
(3) When assembling, mount the support metals first and then the bayonet mount.

Note:
After loosening the reset screw, confirm and adjust the back focus (zoom tracking).

6-4 Removing Bottom cover holder

(1) Remove two screws Ⓕ and the bottom cover holder.

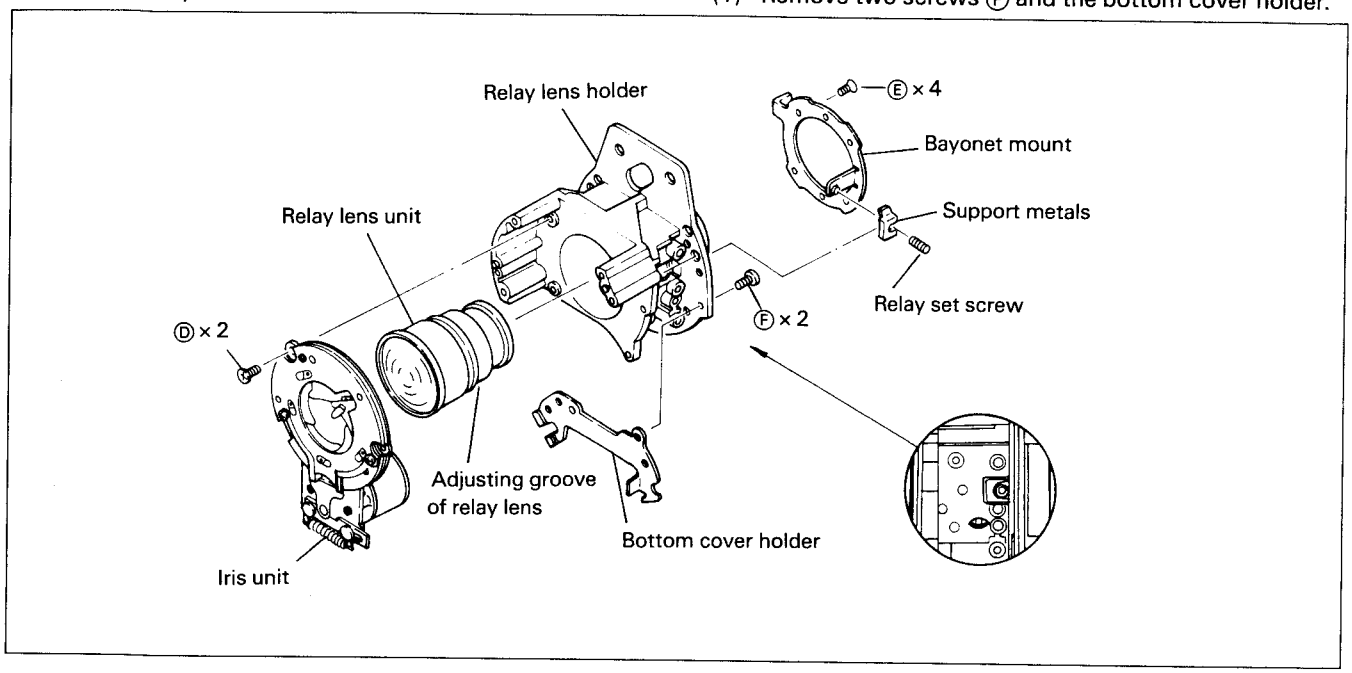


Fig. 6

7. Lens unit Disassembling

* Remove the lens unit from the motor unit. (Refer to "**5. Removing Lens unit, Motor unit and Chassis unit**".)

7-1 Removing zoom ring unit

(1) Match protruding part of the zoom ring unit and the notched part of the zoom lens rear plate, and remove the lens in a backward direction while pulling the macro knob.

(2) When assembling, match the notched part of the zoom lens rear plate with the notched part of the cam ring and then the protruding part of the zoom ring unit, mount it while pulling the macro knob, and fix them.

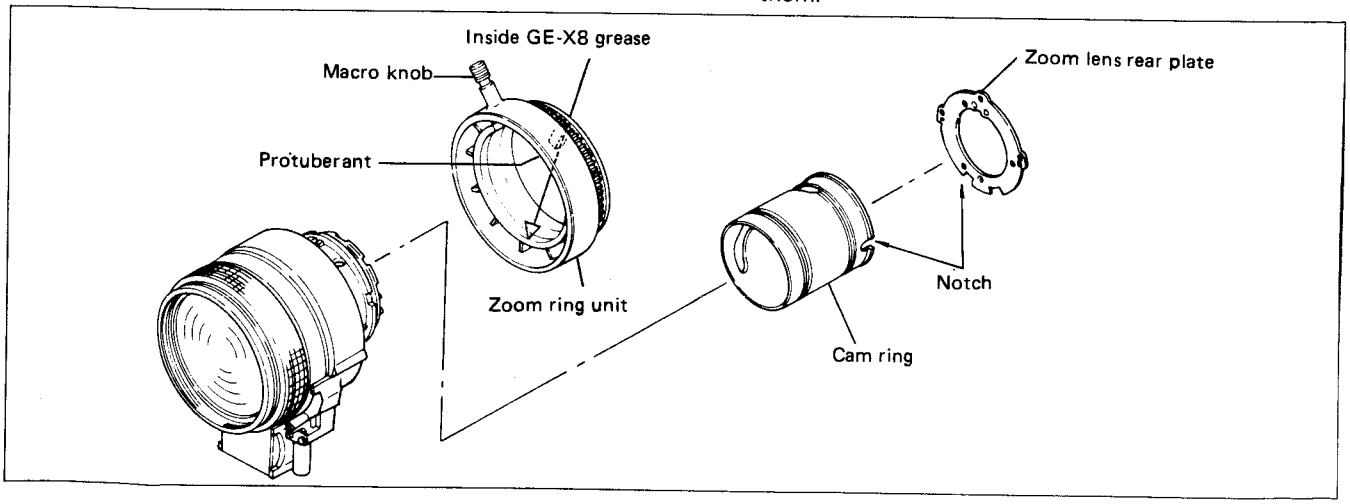


Fig. 7-1

7-2 Zoom ring unit disassembling

(1) Remove the C-ring and pull out the slip washer, slip gear and spring. (The screw lock can be easily removed without using a solvent.)

Note:
Disassemble the zoom ring unit only when the zoom ring does not move smoothly during manual zooming, or the slip torque is irregular.

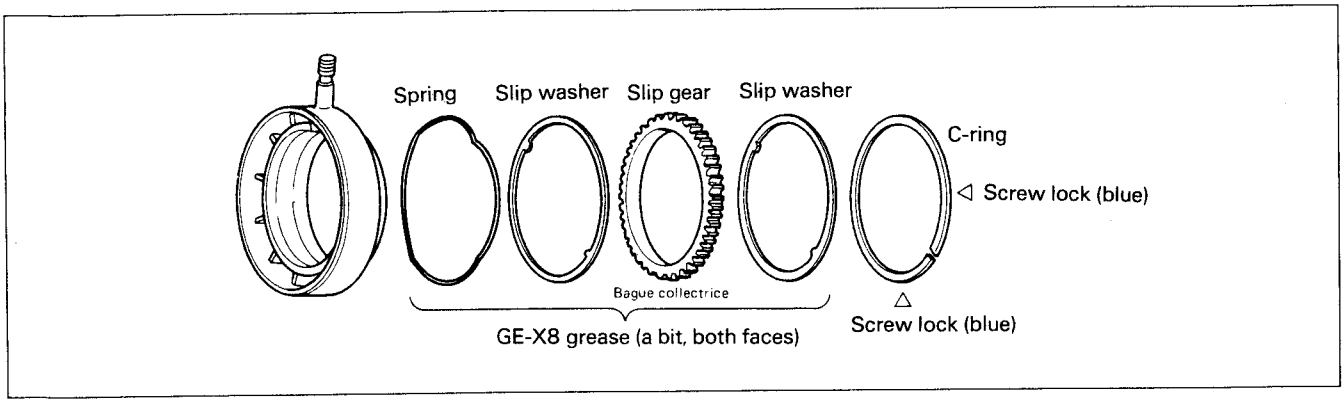


Fig. 7-2-1

(2) Zoom ring slip torque standards

I Standards

Slip torque	1200g·m or below
Fluctuation width	300g·m or below

II Measuring method

Wind a thread around the zoom ring and measure it with a bar type tension gauge. If the measure results are as shown below, the above standards can be satisfied:

Slip torque	450g
Fluctuation width	110g

III Lower limit of zoom ring slip torque

If the slip torque is too low, the electrically driven zoom system will not operate. Determine the lower limit value as follows.

When the zoom motor is driven by 3.8V ± 0.6V, the difference in current between that of zoom operation and that of slipping time must satisfy the following values:

Horizontal state	3 mA or more
Vertical state (Up/down direction)	3 mA or more

(3) When the zoom ring unit does not rotate smoothly, coat the surfaces of the slip gear and slip washer with **GE-X8** grease.

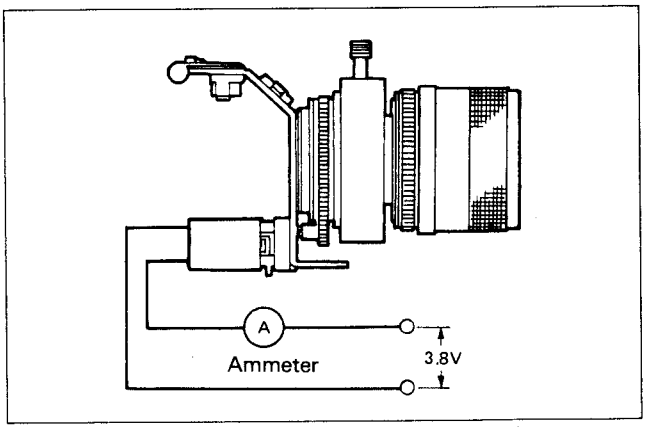


Fig. 7-2-2

7-3 Removing Photo-sensor lens unit and ∞-switch

(1) Remove three screws Ⓐ and Ⓑ (× 2), and pull out the photo-detection lens unit in the backward direction.
(2) Atach an infrared filter to the photo-sensor lens using araldite.
(3) Remove screw Ⓒ and the ∞-switch.
(4) After mounting the ∞ switch, adjust its positions as follows.

I ∞-switch: The correct position for this switch is when the Focus ring is turned from the ∞ end, the switch opens immediately before the ∞ mark leaves the index.

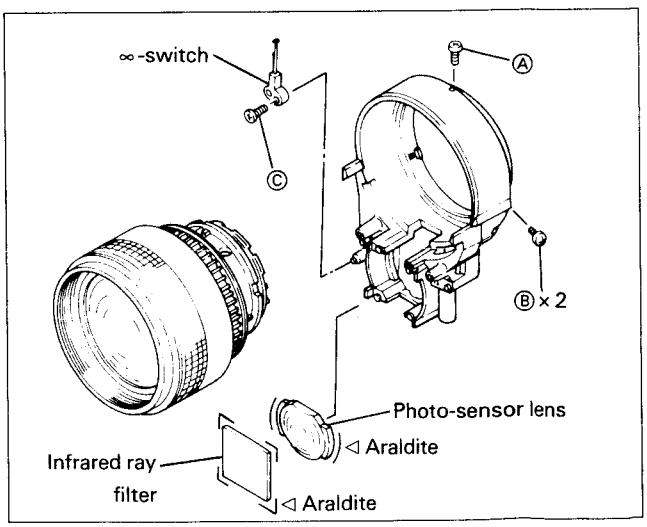


Fig. 7-3

7-4 Removing Outer helicoid unit and Focus ring unit

(1) The outer helicoid unit can be removed by turning it in the direction of the arrow in the drawing.

Note:

Rember or mark the positional relation between the outer helicoid unit and fixed lens tube as they are separated. (Since three helicoids are used, there are three places where helicoids enter).

(2) Be sure start mounting at the same place in which dismounting occurred.

(3) The helicoid unit must smoothly rotate, and the rotation torque must be no greater than 200 g-cm.

(4) Remove the rubber ring. (it is bonded with an adhesive. Use a wooden stick or the like to peel it off.)

(5) Remove three screws Ⓐ and pull them out backward.

Note:

When removing the Focus ring unit from the outer helicoid, draw a line so that the positional relation of the two is easily seen. (This way, focus adjustment after mounting is easier.)

(6) Match the lines up when mounting.

Note:

When the Focus ring unit is removed, make sure that the lens focus is checked and adjusted.

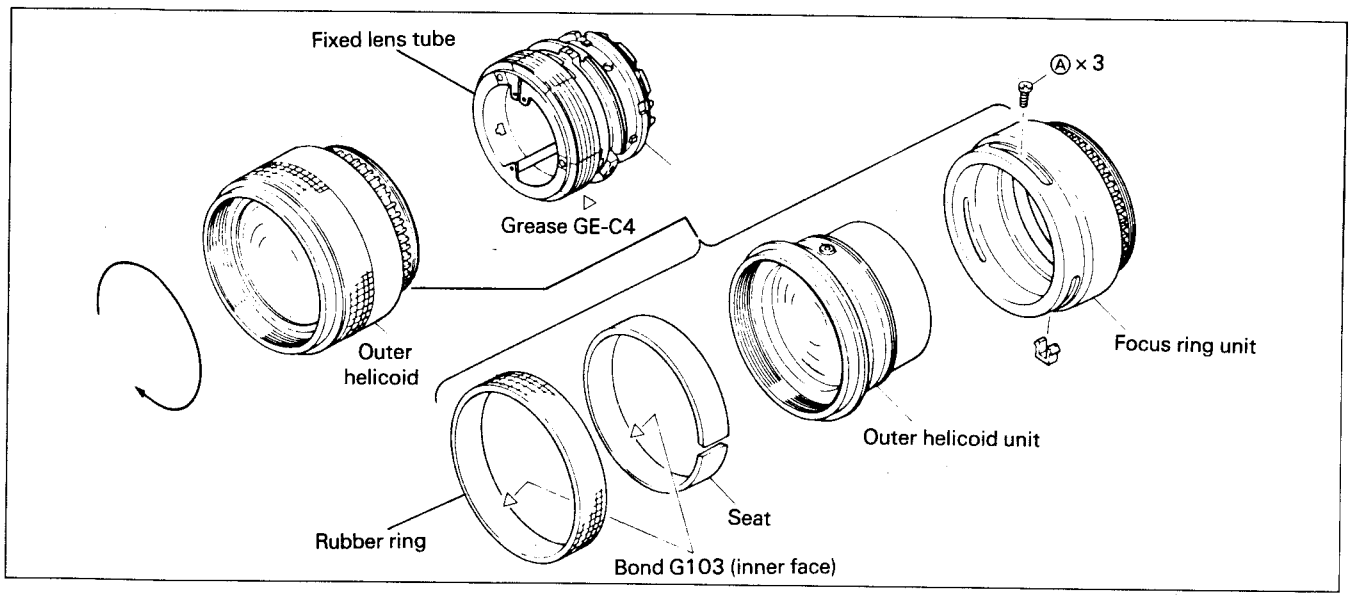


Fig. 7-4

7-5 Removing lens (2 lenses)

(1) Remove the setting ring, G1/G2 lens in the front, C-ring and internal G3 lens. (The screw lock can easily be removed without using a solvent.)

Note:

Be careful not to damage the lens and lens tube when mounting/dismounting the C-ring.

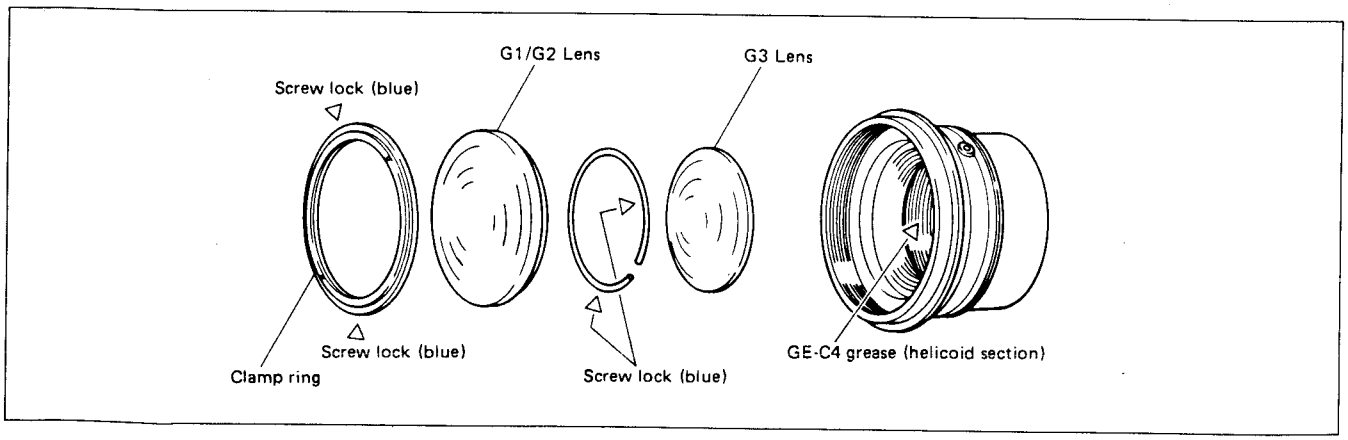


Fig. 7-5

8. Motor unit Disassembling and Zoom motor

8-1 Removing Auto focus motor

* Remove covers (refer to **"4. Removing Covers and Zoom motor and Printed Circuit Board**. Remove the motor unit (refer to **"5. Removing Lens unit, Motor unit and Chassis unit"**).

(1) Remove solder of the lead wire (Red-Black) of the auto focus motor, two screws Ⓐ and the auto focus motor. When assembling, change the mounting position of the auto focus motor by turning two screws Ⓐ and adjust the engagement of the transmission gear and focus gear. Adjust the engagement of the transmission gear and focus gear until a backlash of 0.05 ~ 0.15 mm is obtained.

(2) Remove screw Ⓑ and remove the auto focus motor base from the auto focus motor Ass'y.

(3) Remove the connector of the lead wire (Red-Black) of the zoom motor, two screws Ⓒ and the zoom motor.

Note:

Refer to the wiring diagram for connection of the lead wires of the auto focus motor and the zoom motor.

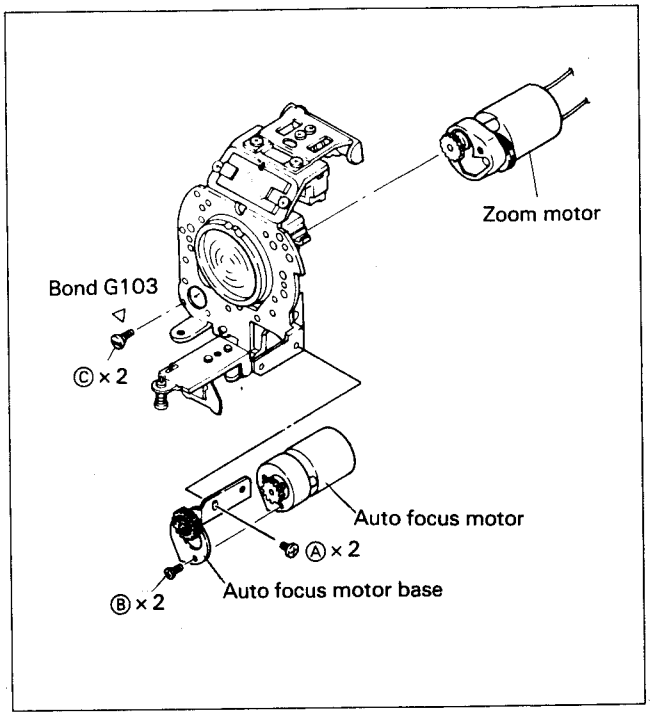


Fig. 8-1-1

8-2 Removing and replacing IRED

Note:

Do not remove the IRED holder and IRED holder mounting plate unless necessary. If removed, **"3-1 IRED focus and spot position adjustment"** and **"3-9 Auto Focus distance measurement adjustment"** must be conducted.

(1) Remove the solder of the IRED lead wire, two screws Ⓐ and the IRED clamp.

(2) When replacing the IRED, cut the IRED lead wire to a length of about 8 mm*, attach as shown in Fig. 8-2-2, and solder it.

(3) Remove screw Ⓔ and remove the IRED holder mounting plate. Remove screw Ⓕ and remove the IRED holder.

(4) Mount the removed IRED holder in the position shown in **Fig. 8-2-2** (0.8 mm ☆). (This is to facilitate adjusting the projection position of the IRED).

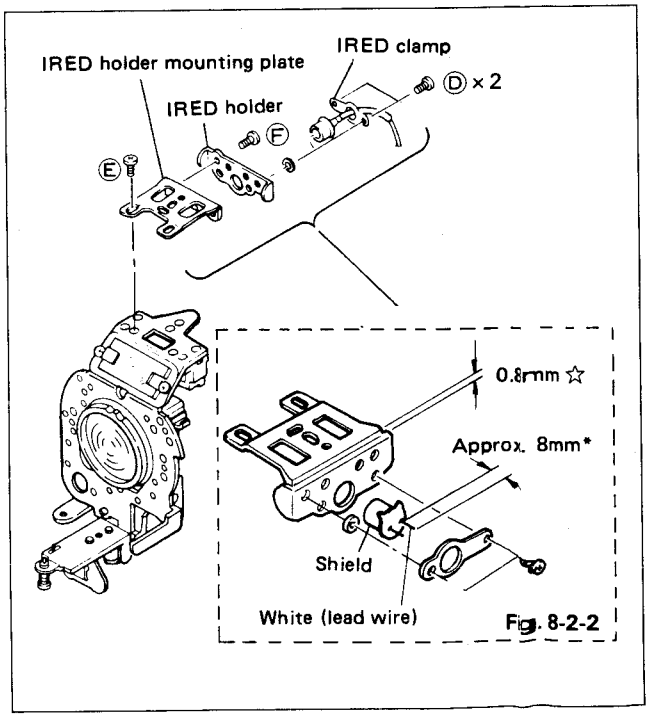


Fig. 8-2-1

8-3 Removing and replacing SPD

Note:
Do not remove the SPD Board and SPD Board holder unless necessary. If removed, **"3-2 SPD focus and parallax adjustment"** and **"3-9 Auto focus distance measurement adjustment"** must be conducted.

(1) Remove the optical end of spring from the SPD plate.
(2) Shake the SPD holder Ass'y in a lateral direction and remove it from the SPD adjusting plate holder.

Note:
Do not deform the SPD plate support.

(3) Remove screw Ⓐ and remove the SPD board from the SPD holder Ass'y.
(4) After mounting the SPD plate, check and adjust the movement of the plate.

I
Standards
There should be no play in the supporting part. The turning torque must be in a range of 0 ~ 5g (central value 3g) without the spring force. When the spring force is applied, the pressing force at the end of screw Ⓐ must be in a range of 10 ~ 20g (central value 15g) when the SPD plate is horizontal.

II Measurement
Use a dial tension gauge (Colex).

III Adjustment
Check for any deformation of the SPD plate support or spring. If deformed, repair or replace.

8-4 Removing IRED lens, IRED mirror and prism unit

Note:
Do not remove the IRED lens and IRED mirror unless necessary. If removed, **"3-1 IRED focus and spot position adjustment"** and **"3-8 Auto focus distance measurement adjustment"** must be conducted.

(1) Remove two screws Ⓑ, the IRED lens holder and the IRED lens.
(2) Remove two screws Ⓒ, the mirror holder and the IRED mirror.
(3) Remove three screws Ⓓ and the prism unit.

Note:
Pay particular attention when handling the IRED lens since it is made of plastic.

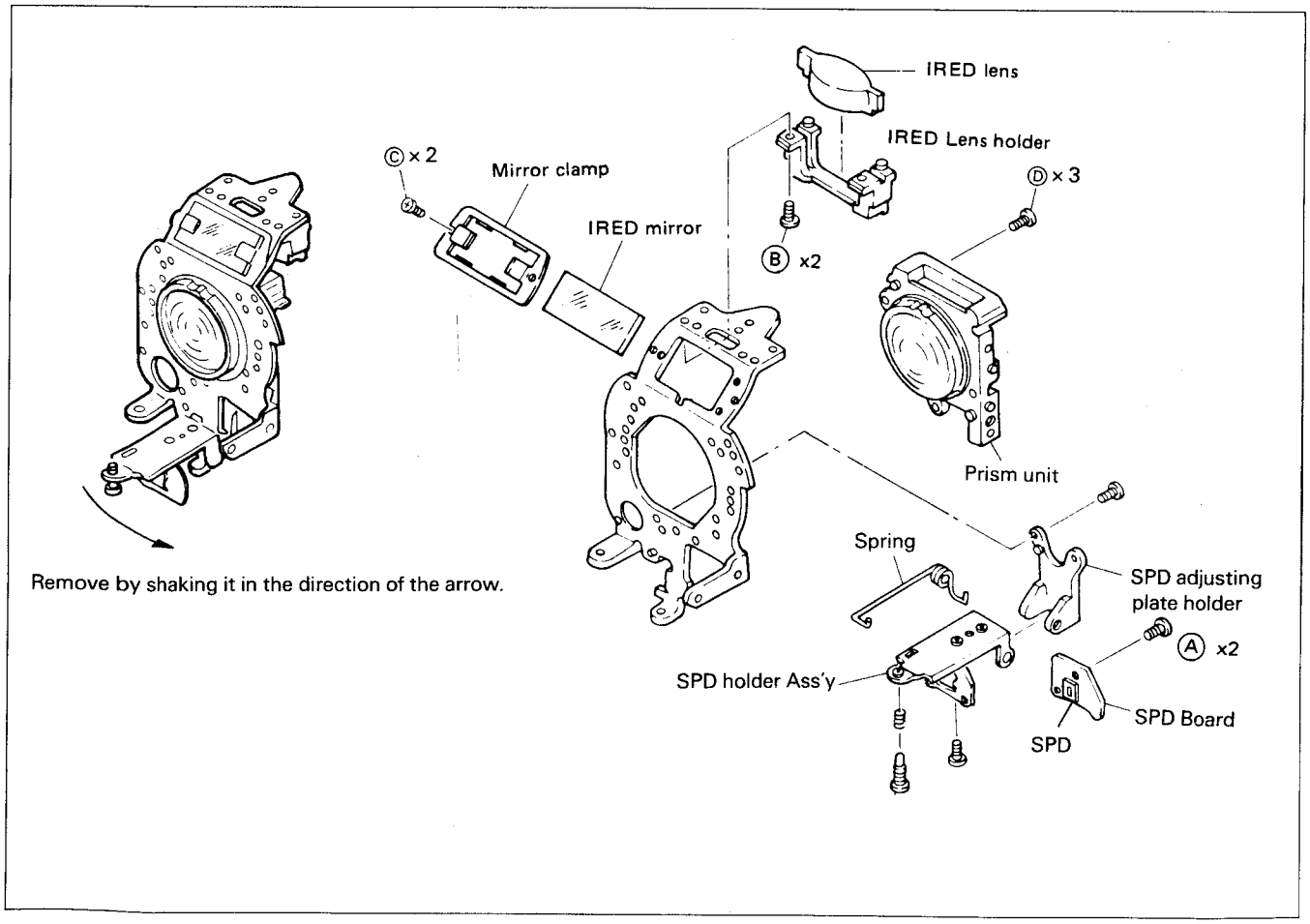
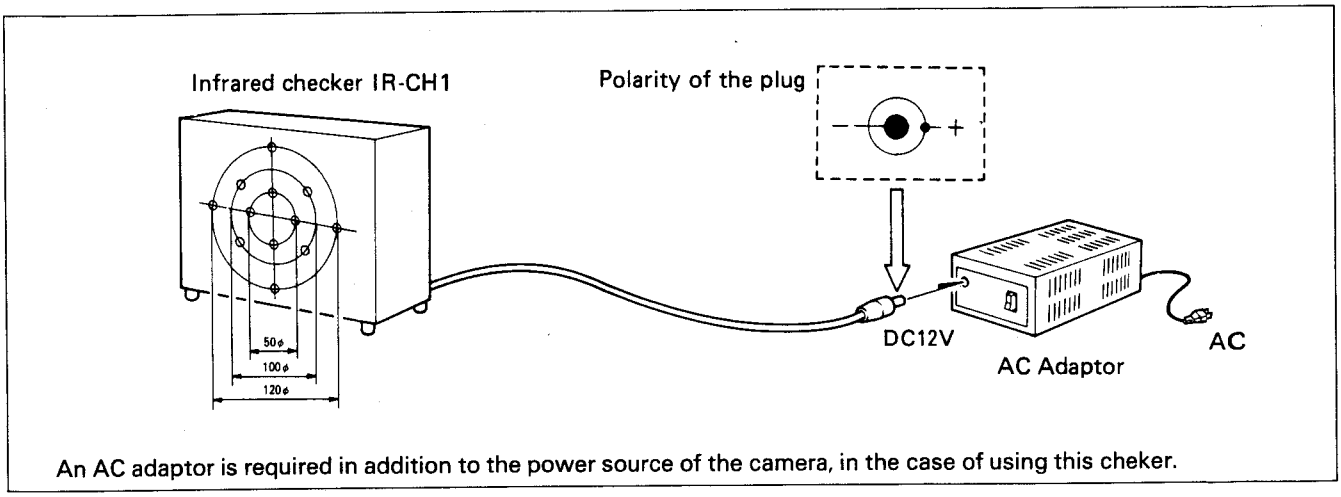


Fig. 9-4

ADJUSTMENT

1. Measuring instruments, jigs and tools required for Adjustment

(1) Equipment, tools and ligs necessary for lens adjustment:
Oscilloscope, Color TV monitor, Illumination equipment, Photographing objectives (Siemens chart, Auto focus chart for adjustment, Black paper, White Kent paper, Standard reflection plate with a reflection rate of 32%), Adjusting bar (fine bar), Black cloth (capable of covering up the photo-sensor part)
(2) Back focus screwdriver (Part No. *A-7541)
(3) Hexagonal wrench (1,5 mm)
(4) Infrared camera
(5) Infrared checker (Part No. *IR-CH1)
(6) SPC focus measuring jig
(7) Diffusion plate (Creamy white plate made of acrylic resin or the equivalent)
(8) Stop watch
(9) Screw lock (1401B)
* Handled by the Parts Section of Sales Engineering Dept., TV Div.



An AC adaptor is required in addition to the power source of the camera, in the case of using this cheker.

Fig. 1-1 Using the infrared checker

As shown in Fig. 1-2, the infrared ray beam makes a spot 3.5ϕ ~ 4.0ϕ wide at a distance of 2 m when this lens is used. In the IR checker, the small circle is 5ϕ, the medium-size circle 100ϕ, and the large circle 120ϕ, and it can be determined that the camera is almost within the standard unless the LED of the small circle lights up.

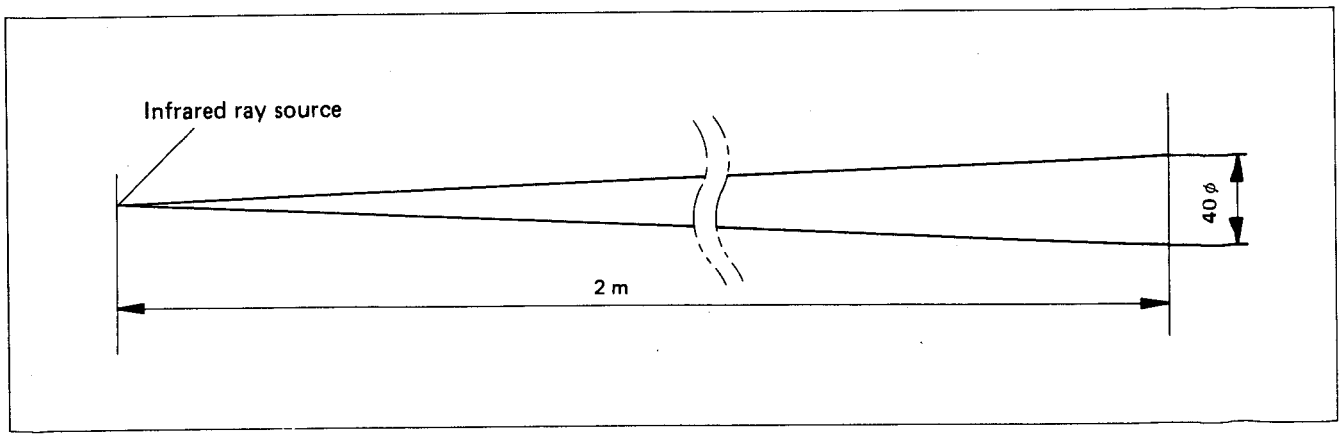


Fig. 1-2

<table>
<tr><th>No.</th><th>Item</th><th>Measuring instrument</th><th>Test point and Adjustment part</th><th>Description</th></tr>
<tr><td>26.</td><td>BACK FOCUS Adjustment</td><td>Monitor TV

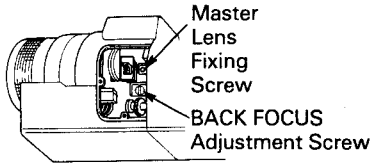
Siemens chart</td><td>VIDEO OUT
● GX-N8 Series Lens
 

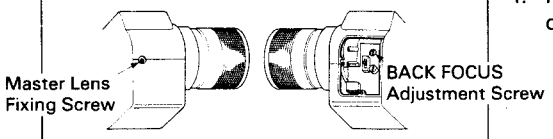
Fig. 2-1
● GX-N6 Series Lens
 

Fig. 2-2</td><td>○ Open the iris in a dark location.

1. Place the Siemens chart at least 3m from the camera. (The chart should be placed as far away as possible.)
2. Adjust the focus to the chart in the TELE position and confirm that the focus is not disturbed when the camera is set to the WIDE position.
3. If the focus is disturbed, loosen the Master Lens Fixing Screw and the adjust the Back Focus with the bakc focus adjustment tool unitl correct focus is established.
4. Repeat step 3 and 4 as necessary to obtain optimum focus.</td></tr>
<tr><td>3.

3-1.</td><td>Auto focus Adjustment

(GX-N8 Series lens only)

IRED focus and Spot position Adjustment</td><td>Monitor TV
Inforared ray TV camera

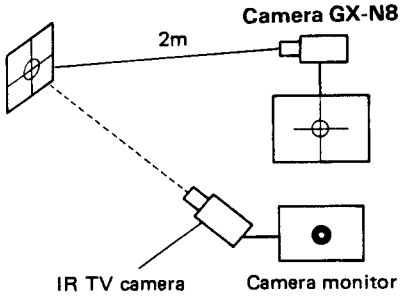
AF adjsuting chart</td><td> 

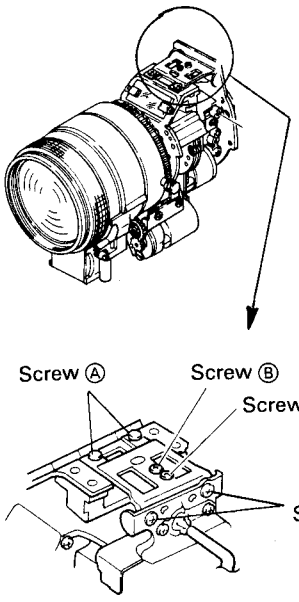
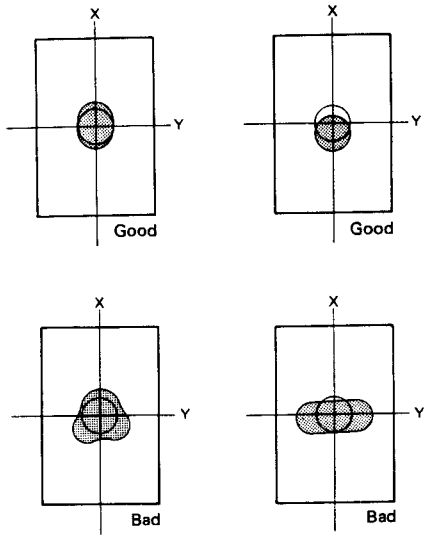
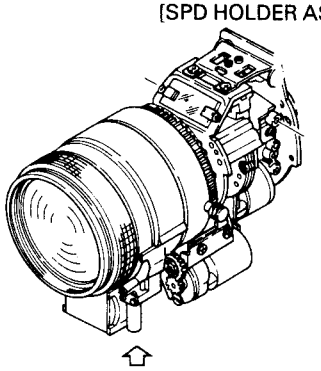
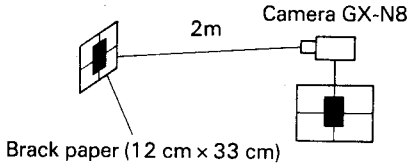
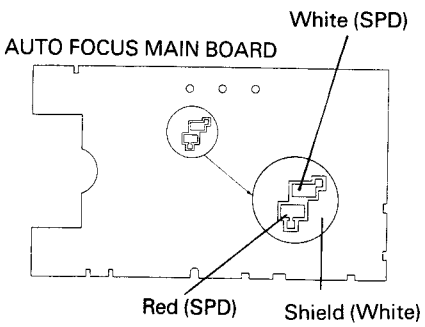
Fig. 3-1-1
IR TV CAMERA MONITOR
 

Fig. 3-1-2</td><td>Note:
(1) Conduct this adjustment only when focus is not automatic after replacing the IRED. In other cases, do not loosen or turn these screws unnecessarily. If neither an infrated ray TV camera nor infrared ray checker is available, this adjustment cannot be conducted.
(2) After this adjsutement, check and adjust the IRED output (refer to "3-3 IRED Output adjustment"), Auto Focus Zoom (refer to "3-7 Auto Focus Zoom correction"), and auto focus distance measurement (refer to "3-8 Auto focus distance Measurement adjsutment").
(3) Choose a relatively dark enyironment for the above procedure.
(4) Make sure to check the center of the monitor display using the pattern generator.

Adjustment procedure using an infrared ray TV camera.

1. Take a photograph of the AF adjusting chart when the distance between the zoom TELE lens front and the chart is 2m and the center of chart is set to the monitor center.
2. Take a photograph of the chart using an infrared ray TV camera and observe the IRED spot. At this time, since the IRED output is largest when the infrared ray receiving part (filter) is covered by a hand or the like to block infrared rays, adjust it when output is highest.
(The blocking of infrared ray receiving part should be repeated).</td></tr>
</table>

No.	Item	Measuring instrument	Test point and Adjustment part	Description
			 Fig. 3-1-4	3. First, set the zoom ring to a scale of about 35 mm, loosen screws Ⓐ and Ⓑ, shake the IRED back and forth and set the IRED spot to the best focus point. Shake it left and right and match the position of the of the IRED spot to the Y-axis of chart. Then, gradually move the zoom ring to the TELE side, check it, and adjust the focus of the IRED spot or the IRED spot position while moving it. 4. Tighten screw Ⓐ 5. Set the zoom lens to the TELE sade, completely block the infrared ray receiving part (in this case, the focus ring is set to ∞), alternately adjust screws Ⓑ and Ⓒ and match the IRED spot to the small circle on the chart. (At this time, the IRED spot is blinking, but the moment it is set to auto focus, the IRED output becomes greater. Aim at this moment for adjustment.) (Fig. 3-1-4) 6. If the IRED spot is not set to the small circle in steps (3) and (5), remove the lens from the camera body, loosen screw Ⓓ and change the spot position in the direction of the adjusting range of steps (3) and (5). 7. Slowly move the zoom ring from the TELE end to the WIDE position, and check that the IRED spot uniformly expands in the lateral direction. 8. Apply screw locks to screws Ⓐ, Ⓑ and Ⓒ after the adjustment.
		Infrared ray checker (IR-CH1)	Infrared ray checker Screw Ⓐ Screw Ⓑ Screw Ⓒ Screw Ⓓ ED HOLDER MOUNTING PLATE]	**Adjustment procedure using an infrared ray checker.** 1. Connect the DC plug of an infrared ray checker with an AC adaptor and set the distance between the zoom TELE end and front lens of the infrared ray checker to 2m. 2. Set the zoom ring to the TELE end, and match up the center of the infrared ray checker and the monitor screen center. 3. Turn on the power for the AC adaptor of the infrared ray checker. Activate the auto focus of the camera and observe the lighting of the infrared ray checker LED while covering the light receiving part (front of the IRED filter) by hand. The IRED output becomes greater when infrared rays are blocked and when the output is highest adjust. The blocking of the infrared ray receiving part should be repeated many times. 4. Loosen screws Ⓐ and Ⓑ and shake the IRED back and forth and left and right. Also, alternately adjust screws Ⓑ and Ⓒ, so that the adjustment is done to the extent that the innermost LED's (minimum number of LED's) light and the image on the monitor is in focus. 5. After the adjustment, apply screw locks to screws Ⓐ, Ⓑ and Ⓒ.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
3-2.	SPD focus and Parallax Adjsutment	SPD focus Measuring Jig	Screw Ⓐ Screw Ⓑ [SPD HOLDER ASS'Y]  **Fig. 3-2-1**	1. Loosen screws Ⓐ and Ⓑ, and set the distance ring to 2m. 2. Apply a measurement jig cut into a length of 18.35 mm to the photo-detection lens and lightly tighten screw Ⓐ together with the front of SPD. **Note:** (1) The size of 18.35 mm must be exact since variance of the photo-detectin lens and SPD may cause the set out of the standard.
		Osilloscope Back paper	CH-1: White (SPD) GND: Shild (SPD) [AUTO FOCUS MAIN BOARD]  **Fig. 3-2-3**	3. Attach the black paper on a white wall, and take a photograph with the black paper in the center at a distance of 2m. 4. Connect an osilloscope as follows: CH-1 White (SPD) GND Shield (SPD) DC mode 20 mV or 50 mV DIV 5. Swing the SPD left and right with the center of the swing set to screw Ⓐ, tighten screw Ⓑ in the positin where the CH-1 voltage is the lowest, and fix the SPD. 6. Retighten screw Ⓐ and apply screw locks to screws Ⓐ and Ⓑ.
			 **Fig. 3-2-4**	

No.	Item	Measuring instrument	Test point and Adjustment part	Description
3-3.	IRED output Adjsutment	Oscilloscope	CH-1: TP IR CH-2: TP R55 TRIR: TP CLR [AUTO FOCUS MAIN BOARD] Short land C Short land D AUTO FOCUS MAIN BOARD]	1. Measure a grey or dark object at a 2 ~ 3m distance. 2. In combination of the opening (open circuit) and closing (short circuit) of the short lands C and D, adjsut IRED output frequency to 3.0 V ±0.12V.
3-4.	Oscillation frequency	Osiclloscope	CH-1: TP SYNC TRIG: TP CLR [AUTO FOCUS MAIN BOARD] Short land A Short land B [AUTO FOCUS MAIN BOARD]	**Note:** (1) As the oscillation frequency is adjusted at the favtory, adjsut IC2, R47, R48, R49, C21, C22, etc. only when replacing them. ○ Set to Auto focus mode 1. In combination of the opening (open circuit) and closing (short circuit) of the short lands A and B, adjust SYNC pulse cycle to 118 μs ±15μs.

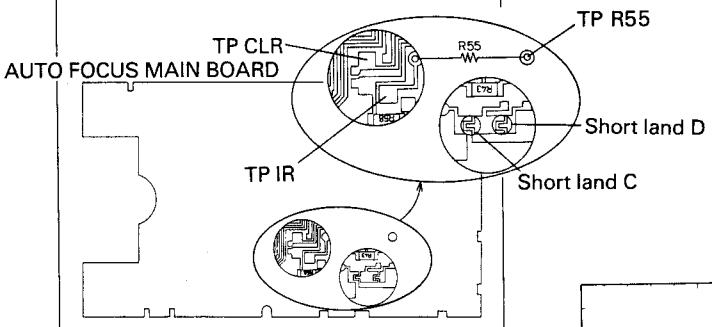


Fig. 3-3-1

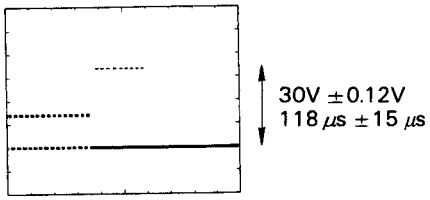


Fig. 3-3-2

IRED output by combining the short lands C and D

IRED output	Low	Medium		Hight
Short land C	Open	Close	Open	Close
Short land D	Open	Open	Close	Close

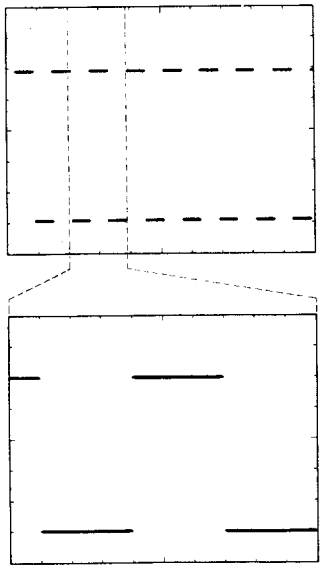


Fig. 3-4-2

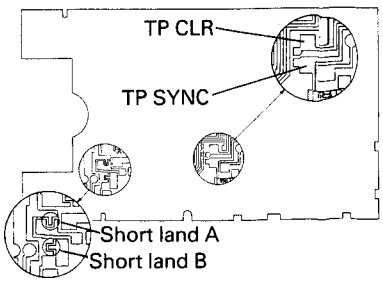
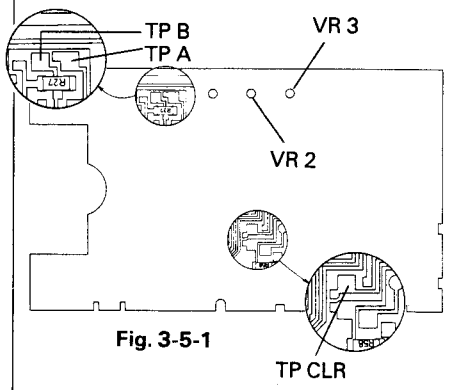
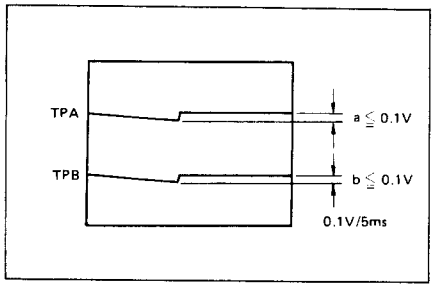
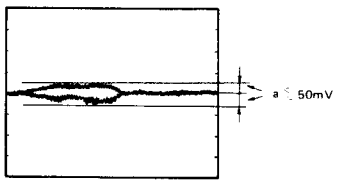
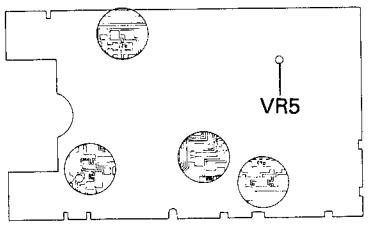
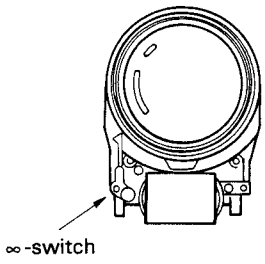
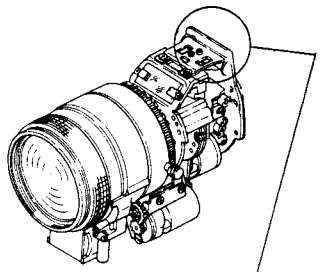
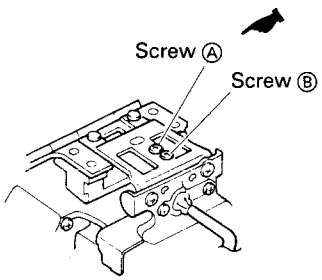


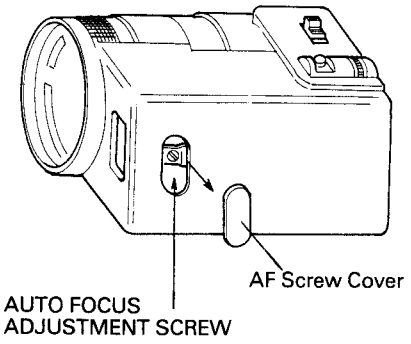
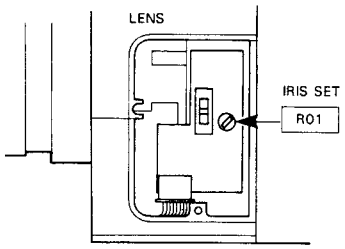
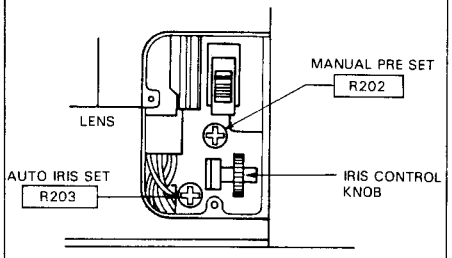
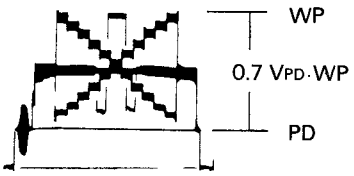
Fig. 3-4-1

SYNC pulse cycle by combining the short lands A and B

SYNC pusle cycle	Long	Medium	Short
Short land A	Open	Close	—
Short land B	Open	Open	Close

No.	Item	Measuring instrument	Test point and Adjustment part	Description
3-5.	Offset Adjustment	Oscilloscope	CH-1: TP A CH-2: TP B TRIG: TP CLR [AUTO FOCUS MAIN BOARD]  Fig. 3-5-1  Fig. 3-5-2	○ Completely block the SPD. 1. Adjust the voltage of TPA and TP B to 0.1 Vp-p or less by turning VR2 and VR3. ● Adjust the offset voltage to within 0.1 Vp-p including noise. ● The waveform directin should be the same as shown in Fig. 3-5-2. ● The adustment is easier if the lead wire of the AF motor is disconnected.
3-6.	Channel balance Adjustment	Osicllioscope Diffusion plate (white acrylic plate)	CH-1: TP A CH-2: TP B (polarity inversion) TRIG: TP CLR ● Set the mode switch to ADD  Fig. 3-6 * a: Dirrerence of output between TP A and TP B	**Note:** (1) Since this unit is easily affeected by electro-magnetic noise, do not use in places where fluorrescent lamps are in use or where there is anything apt to emit noise of that type. 1. Mount a diffusion plate (white acrylic palte) on the photo-detection lens front and take a picture of white Kent paper. 2. Set the zoom ring to the WIDE end, and match the distance scale and photographing distance.. If the auto focus motor moves at this time, disconnect the lead wire of the Auto focus motor. (Refer to the wiring diagram for connection of the motor lead wire.) 3. Set the difference of output betwen TPA and TPB to a value no greater than 50 mV by operating VR1.

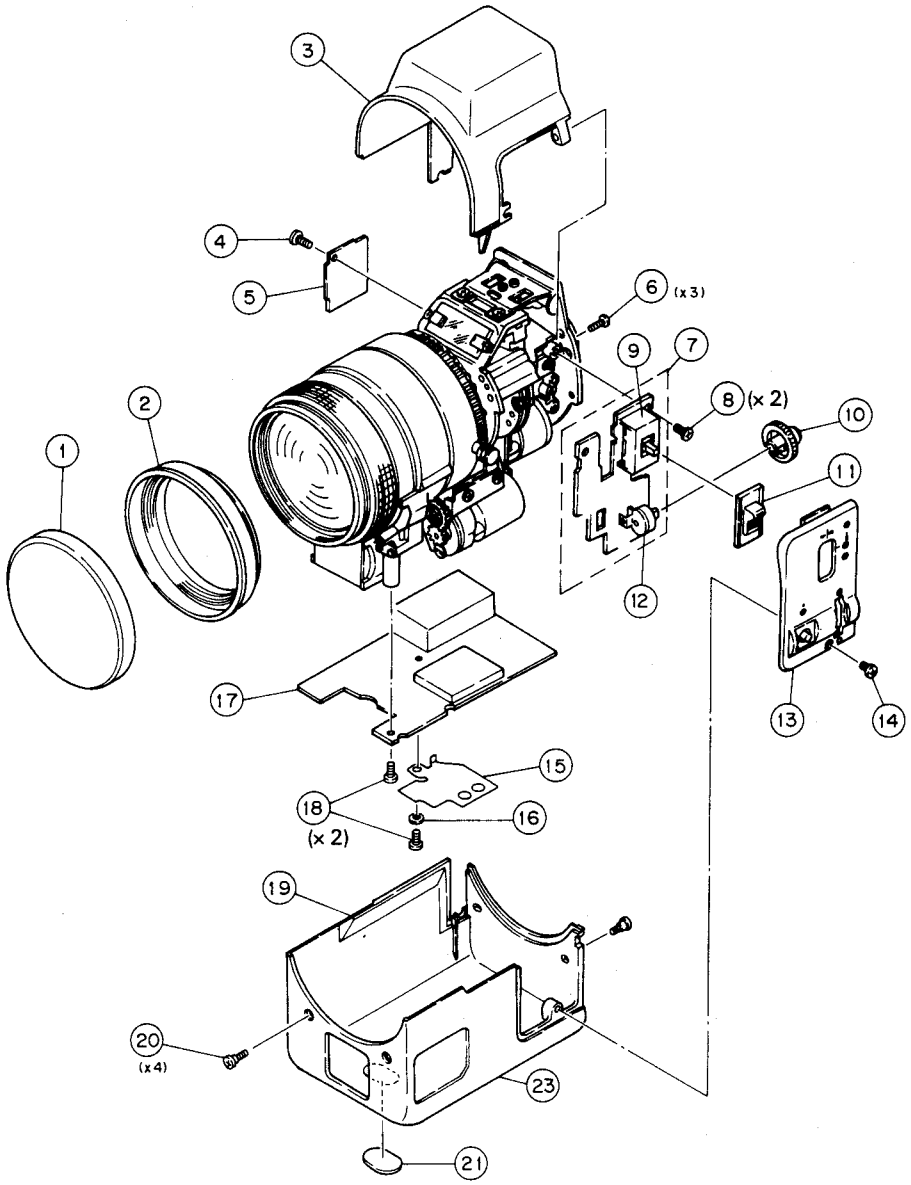
No.	Item	Measuring instrument	Test point and Adjustment part	Description
3-7.	Auto focus motor speed Adjustment	Stop watch	VR 5 AUTO FOCUS MAIN BOARD  **Fig. 3-7-1**  * Lens front view **Fig. 3-7-2**	**Note:** (1) Check that the ∞-switch is mounted in the correct positions before measuring. For an explanation of the mounting positions of the this switch, refer to "8-5 Removing ∞-switch". 1. Set the focus to MANUAL, the distance ring to the shortest distance, and block the SPD. 2. Set the focus to auto focus mode and use a stop watch to measure the time of the ∞ switch to be grounded after the distance scale "1" on the distance ring has left the index. 3. Set the time described in "Step 2." to 3.0 sec ±0.3 sec by operating VR 5.
3-8.	Auto focus zoom correction	Standard reflection board 32%	 **Fig. 3-8-1**  **Fig. 3-8-2**	1. Conduct the distance measurement of the Auto focus with a chart having a reflection rate of 32% placed at a distance of 2m and setting the ring to the zoom TELE end. 2. Slowly move the zoom ring from the TELE end towards WIDE. If the distance ring does not move, no adjustment is needed. 3. If the result is not good, move the IRED up and down by turning screws Ⓐ and Ⓑ, and eliminate the movement of the distance ring at the time of zooming. ● Since the amount of adjustment is about ±0.1 mm at the IRED position, turn the adjusting screw in increments of one quarter to one eighth of a turn for the adustment. ● The standard stipulates that, when zooming is conducted from the TELE end to the WIDE end of 30 mm, if the distance ring does not move, it is satisfactory. However, efforts must be made to minimize the movement of distance ring caused by zooming.

No.	Item	Measuring instrument	Test point and Adjustment part	Description
3-8.	Auto focus distance measure-ment Adjustment	Monitor TV Siemens chart	VIDEO OUT AUTO FOCUS ADJ. Screw  **Fig. 3-8-3**	○ **Open the iris in a dark location.** 1. Detach the screw cover shown in Fig. 3-8-3. 2. Place the Siemens chart 2m distant from the lens and shoot this chart aftyer turning the ZOOM RING fully to the TELE side. 3. Set the FOCUS SWITCH to "AUTO". 4. Rotate the FOCUS RING to the near end/far end to cause AUTO FOCUS operation, and confirm that optimum focus is obtained. 5. If the focus is disturbed, rotate the AUTO FOCUS ADJ. SCREW while keeping the FOCUS SWITCH set at "AUTO", and by adjusting this screw, obtain optimum focus. 6. After adjsutment is completed, reinstall the screw cover. **Note:** (1) Under ajdustment in this section, only the measuring distance can be adjusted. As to adjustment of the infrared-ray spot, refer to the Lens Manual.
4.	AUTO IRIS Adjustment	Oscilloscope [H-rate 10 : 1] Gray scale pat-tern	VIDEO OUT R202 (MANUAL PRE SET) R203 (AUTO IRIS SET) [IG BOARD] [R01 (IRIS SET) [IG BOARD] (GX-N6U/UT only)]   * Steps 1, 3 & 4 & 5 apply only to the GX-N8U/UT **Fig. 4-2**	○ **Center the LENDS IRIS CONTROL KNOB.** ○ **With regard to VR8277BK01, set the Ⓐ IRIS COMPENSATION SWITCH to "0".** 1. Set the FULL AUTO SWITCH to Ⓐ (AUTO). 2. Measure the VIDEO OUT and adjust R203 (AUTO IRIS SET) or R01 (IRIS SET) so that the carrier becomes 0.7 V_{PD-WD} as shown in Fig. 4-1.  **Fig. 4-1** (**Note**) When the WHITE BALANCE is off center, the waveform will not appear as shown in the illustration. In such cases, fade the color out by rotating R43 (CHROMA LI-MITED). 3. Set the FULL AUTO SWITCH to the "Ⓜ" (MANUAL) position. 4. Using the same procedure as in step 2, adjust R202 (MANUAL PRESET) so that the carrier becomes 0.7 V_{PD-WD}. 5. Switch the FULL AUTO SWITCH alter-nately to Ⓐ and "Ⓜ" to make certain the there exists no level difference between the two.

PARTS LIST

1. SYSTEM ASSEMBLY REPLACEMENT PARTS LIST

1-1 Exploded View

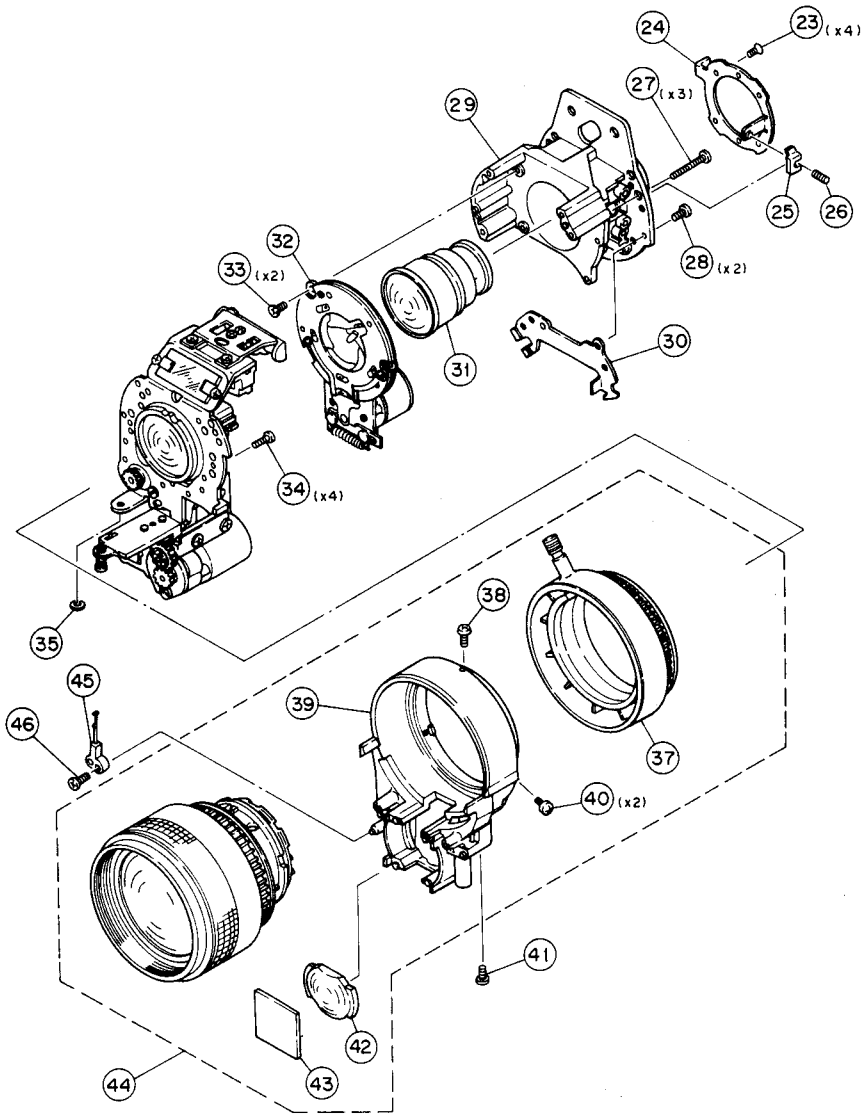


1-2 Parts list

View No.	Part No.	Parts Name	Remarks
1	CM42957-00A	Lens cap	
2	DA7-0692-002	Lens hood	
3	DA7-1182-000	Top cover	
4	XA4-2200-457	Screw	
5	DG9-3102-000	Power zoom board	
6	XA4-2170-609	Screw	x 3
7	DG9-3104-000	Iris drive board Ass'y	
8	XA4-2200-457	Screw	x 2
9	WC3-0055-000	Auto focus switch	
10	DA7-1187-000	Iris knob	
11	DA7-1186-000	Auto focus knob	

View No.	Part No.	Parts Name	Remarks
12	VR5-2880-103	Iris VR (10 kΩ)	
13	DF7-0171-000	Side cover	
14	XA3-1200-459	Screw	
15	DH9-0117-000	Sheild plate	
16	XD1-1102-133	Washer	
17	DG9-3103-000	Auto focus board	
18	XA1-7170-457	Screw	x 2
19	DA7-1181-000	Bottom cover	
20	DA7-0695-000	Bottom cover screw	x 4
21	DA7-0700-000	Cover plate	
22	CM31546-A01	AF plate	

1-3 Exploded View

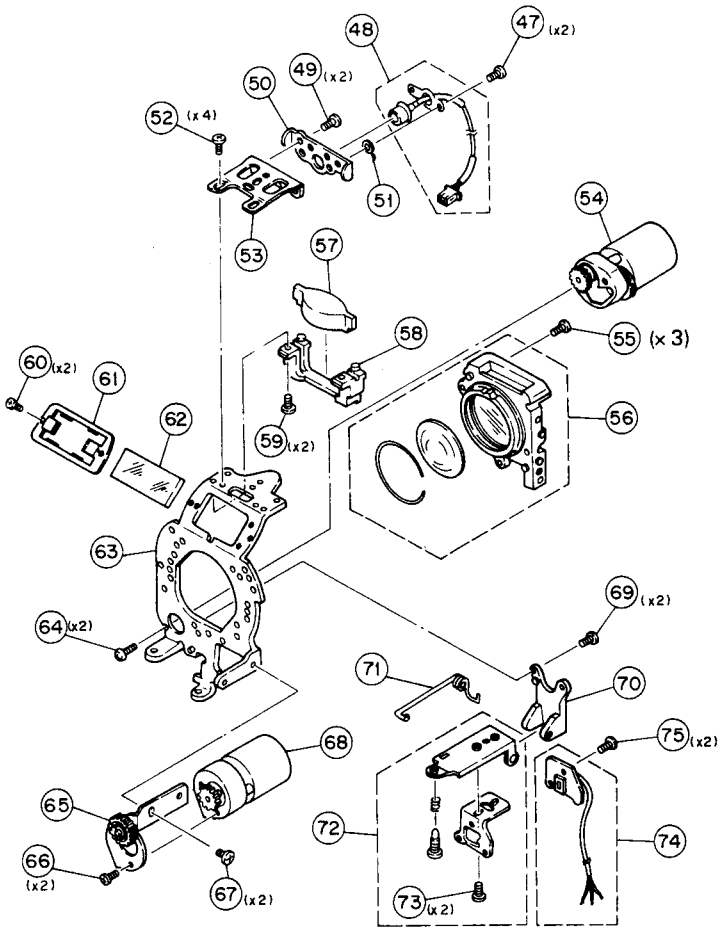


1-4 Parts list

View No.	Part No.	Parts Name	Remarks
23	XA3-3200-507	Screw	x 4
24	DA7-0759-000	Bayonet mount	
25	DA7-0768-000	Support metal	
26	X99-0508-000	Relay set screw	
27	XA1-7201-909	Screw	x 3
28	XA3-6200-509	Screw	x 2
29	DA7-0751-000	Relay lens holder	
30	DA7-1184-000	Bottom cover holder	
31	DG9-3073-000	Relay lens Ass'y	
32	DH8-0017-000	IG meter Ass'y	
33	XA3-1170-459	Screw	x 2

View No.	Part No.	Parts Name	Remarks
34	XA3-1170-509	Screw	x 4
35	XD1-1103-135	Washer	
37	CG9-5062-000	Zoom ring unit	
38	DA7-0702-000	Screw	
39	DY2-7014-000	Index ring	
40	X91-1724-420	Screw	x 2
41	X91-2035-950	Screw	
42	DN7-0065-000	SPD lens	
43	DN7-0163-000	IRED filter	
44	DY1-7031-000	Zoom lens Ass'y	
45	WC8-9008-000	Lens switch	

1-5 Exploded view



⑦① Detail Ⓐ

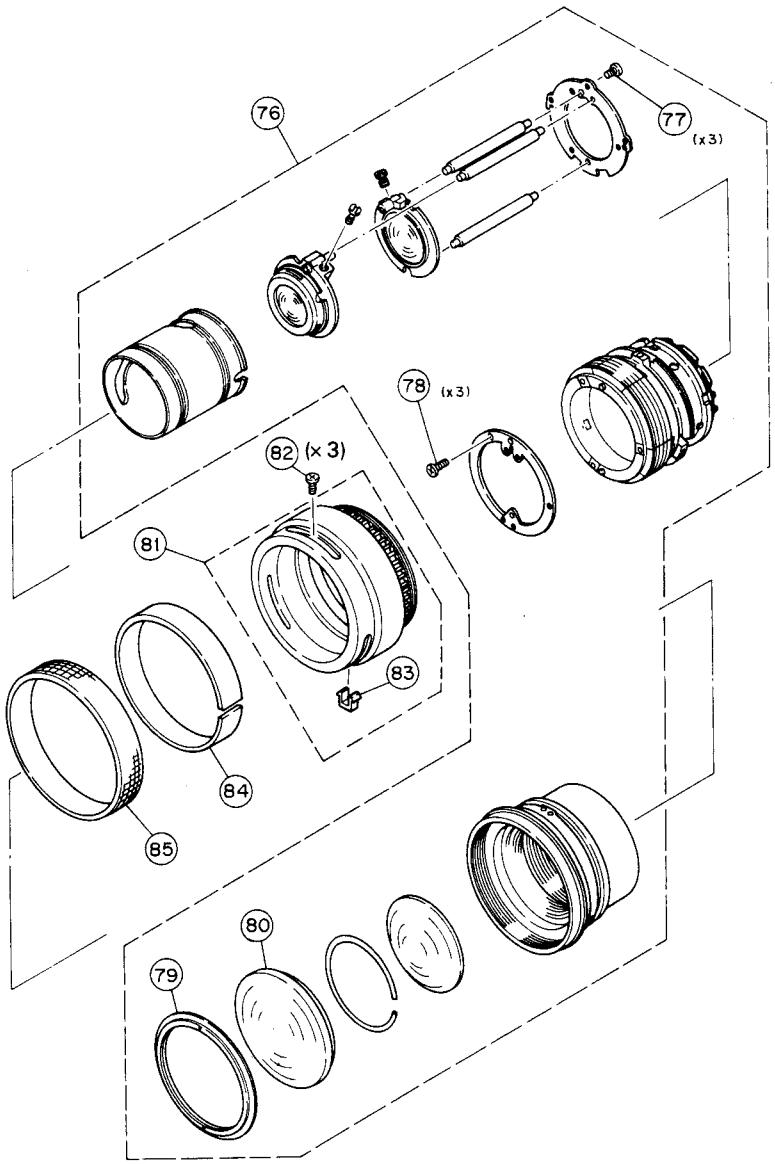
A	SIZE
ø0.35mm	(035)
ø0.40mm	(040)
ø0.45mm	(045)

1-6 Parts list

View No.	Part No.	Parts Name	Remarks
47	XA1-7170-257	Screw	× 2
48	DG9-3091-000	IRED Ass'y	
49	X91-1737-670	Screw	× 2
50	DA7-0688-000	IRED holder	
51	XD1-1102-122	Washer	
52	XA1-7200-257	Screw	× 4
53	DA7-0689-000	IRED adjusting plate	
54	WL1-0046-000	Zoom motor Ass'y	
55	XA1-7170-359	Screw	× 3
56	DG9-3032-000	Prism unit	
57	DN7-0189-000	IRED lens	
58	DN7-0696-000	IRED lens holder	
59	XA1-7170-359	Screw	× 2
60	XA1-7140-307	Screw	× 2
61	DS1-7006-000	Mirror stopper	
62	DN7-0190-000	IRED mirror	

View No.	Part No.	Parts Name	Remarks
63	DA7-0674-000	Zoom lens base	
64	X96-1422-100	Screw	×2
65	DG9-3106-000	Auto focus motor base	
66	X96-1422-090	Screw	×2
67	XA1-1200-307	Screw	×2
68	DG9-3088-000	Auto focus motor Ass'y	
69	XA1-7170-359	Screw	×2
70	DA7-0703-000	SPC adjusting palte holder	
71	DS1-6028-035	Spring } Refer to	
	DS1-6028-040	Spring } Detail Ⓐ	
	DS1-6028-045	Spring }	
72	DG9-3108-000	SPD holder Ass'y	
73	XA1-7170-257	Screw	×2
74	DG9-3097-000	SPD board Ass'y	
75	XA1-7170-257	Screw	×2

1-7 Exploded view



1-8 Parts list

View No.	Part No.	Parts Name	Remarks
76	DY1-7044-000	Helicoid/Cam Ass'y	
77	XA3-1170-509	Screw	x 3
78	XA3-1170-359	Screw	x 3
79	DA7-0642-000	Clamp ring	
80	DP7-0172-000	G1/G2 lens	
81	DG9-3021-000	Focusing ring unit	
82	X91-1737-300	Screw	x 3
83	DA7-0653-000	Stopper	
84	DA7-0655-000	Sheet	
85	DA7-0654-000	Rubber ring	

2. PRINTED CIRCUIT BOARD PARTS LIST

2-1. AUTO FOCUS BOARD

Symbol No.	⚠	Part No.	Parts Name	Remarks
Variable Resistor				
VR101		VR5-3430-472	CH V R	4.7 kΩ
VR102		VR5-3430-152	CH V R	1.5 kΩ
VR103		VR5-3430-152	CH V R	1.5 kΩ
VR105		VR5-3430-152	CH V R	1.5 kΩ
Resistor				
R111		QRSA08J-513YL	CH MG R	51 kΩ 1/10W J
R112		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R113		QRSA08J-225YL	CH MG R	2.2 MΩ 1/10W J
R114		QRSA08J-513YL	CH MG R	51 kΩ 1/10W J
R115		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R116		QRSA08J-222YL	CH MG R	2.2 kΩ 1/10W J
R117		QRSA08J-303YL	CH MG R	30 kΩ 1/10W J
R118		QRSA08J-303YL	CH MG R	30 kΩ 1/10W J
R121		QRSA08J-152YL	CH MG R	1.5 kΩ 1/10W J
R122		QRSA08J-202YL	CH MG R	2.0 kΩ 1/10W J
R123		QRSA08J-682YL	CH MG R	6.8 kΩ 1/10W J
R124		QRSA08J-562YL	CH MG R	5.6 kΩ 1/10W J
R125		QRSA08J-562YL	CH MG R	5.6 kΩ 1/10W J
R126		VR5-3410-182	CH MG R	1.8 kΩ 1/8W F
R127		VR5-3410-182	CH MG R	1.8 kΩ 1/8W F
R128		VR5-3410-223	CH MG R	22 kΩ 1/8W F
R129		VR5-3410-223	CH MG R	22 kΩ 1/8W F
R130		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R131		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R132		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R133		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R141		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R142		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R143		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R144		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R145		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R146		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R147		QRSA08J-272YL	CH MG R	2.7 kΩ 1/10W J
R148		QRSA08J-272YL	CH MG R	2.7 kΩ 1/10W J
R149		QRSA08J-123YL	CH MG R	1.2 kΩ 1/10W J
R152		QRSA08J-203YL	CH MG R	20 kΩ 1/10W J
R153		QRSA08J-222YL	CH MG R	2.2 kΩ 1/10W J
R154		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R155		QRG016J-120	CH MG R	12 Ω 1W J
R156		QRSA08J-1R0YL	CH MG R	1 Ω 1/10W J
R157		QRSA08J-1R0YL	CH MG R	1 Ω 1/10W J
R158		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R159		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R160		QRSA08J-333YL	CH MG R	33 kΩ 1/10W J
R161		QRSA08J-152YL	CH MG R	1.5 kΩ 1/10W J
R164		QRSA08J-302YL	CH MG R	3.0 kΩ 1/10W J
R165		QRSA08J-302YL	CH MG R	3.0 kΩ 1/10W J
R168		QRSA08J-271YL	CH MG R	270 Ω 1/10W J
R169		QRSA08J-203YL	CH MG R	20 kΩ 1/10W J
R171		QRSA08J-163YL	CH MG R	16 kΩ 1/10W J
R173		QRSA08J-432YL	CH MG R	4.3 kΩ 1/10W J
R174		QRSA08J-102YL	CH MG R	1 kΩ 1/10W J
R175		QRSA08J-332YL	CH MG R	3.3 kΩ 1/10W J
R176		QRSA08J-332YL	CH MG R	3.3 kΩ 1/10W J
R177		QRSA08J-332YL	CH MG R	3.3 kΩ 1/10W J
R180		QRG016J-100	MF R	10 Ω 1W J

Symbol No.	⚠	Part No.	Parts Name	Remarks
Capacitor				
C111		VC5-0700-105	CH Tan. E Cap	1 μF 10V M
C112		VC5-0090-224	CH Tan. E Cap	0.22 μF 35V M
C113		VC5-0700-105	CH Tan. E Cap	1 μF 10V M
C114		VC5-0090-224	CH Tan. E Cap	0.22 μ 35V M
C115		Y22-0036-000	CH C Cap.	0.047μF 100V J
C116		Y22-0036-000	CH C Cap.	0.047μF 100V J
C117		Y22-0037-000	CH C Cap.	0.01μF 25V M
C118		Y22-0037-000	CH C Cap.	0.01μF 25V M
C120		VC5-0700-105	CH Tan. E Cap	1 μF 10V M
C121		Y22-0038-000	CH C Cap	50 pF 50V K
C122		VC5-2250-104	CH C Cap	0.1 μF 50V M
C123		Y22-0040-000	CH C Cap	56 pF 50V K
C124		VC5-2250-224	CH Tan. E Cap	0.22 μF 50V M
C125		VC5-2250-224	CH Tan. E Cap	0.22 μF 50V M
C131		QET40JR-107	CH AL E Cap	100 μF 6.3V M
C133		QET41ER-107	CH AL E Cap	100 μF 6.3V M
C141		QET41ER-107	CH AL E Cap	100 μF 6.3V M
C142		QET41ER-107	CH AL E Cap	100 μF 6.3V M
C144		QET41CR-106	CH AL E Cap	10 μF 16V M
Diode				
D102		MA151A	Chip Diode	
D103		MA153	Chip Diode	
Transistor				
Q101		2SC1623 (L5)	Chip Transistor	
Q102		2SC1623 (L5)	Chip Transistor	
Q103		2SC1623 (L5)	Chip Transistor	
Q104		2SD999 (CL)	Chip Transistor	
Q105		2SB624 (BV3)	Chip Transistor	
Q106		2SB624 (BV3)	Chip Transistor	
Q107		2SC1623 (L5)	Chip Transistor	
Q108		2SD596 (DV3)	Chip Transistor	
Q109		2SC1623 (L5)	Chip Transistor	
Q110		2SD596 (DV3)	Chip Transistor	
Q111		2SC1623 (L5)	Chip Transistor	
Q112		2SD999 (CL)	Chip Transistor	
Q113		2SB798 (DL)	Chip Transistor	
Q114		2SC1623 (L5)	Chip Transistor	
Q115		2SC1623 (L5)	Chip Transistor	
Q116		2SA812 (M6)	Chip Transistor	
Q117		2SC1623 (L5)	Chip Transistor	
IC				
IC101		AN6993S	IC	
IC102		MN1453AXS	IC	
IC103		NJM2901M	IC	
IC104		NJM78L05A	IC	Regulator IC
Others				
		DG9-3091-000	IRED	
		DG9-3097-000	SPD	
		DH2-0368-000	Connector Ass'y	

2-2. POWER ZOOM BOARD

Symbol No.	⚠	Part No.	Parts Name	Remarks
Resistor				
R301		QRD121J-101A	C R	100 Ω 1/2W J
R302		QRSA08J-222YL	CH MG R	2.2 K 1/10W J
R303		QRSA08J-222YL	CH MG R	2.2 K 1/10W J
Capacitor				
C302		QET41EM-336M	AL E Cap	33 μF 25V M
C304		VC5-0300-473	CH C Cap	0.047 μF 50V
Transistor				
Q301		2SD636 (R,S)	Si Transistor	Motor drive
Q302		2SD641 (S,T)	Si Transistor	Motor drive
Q303		2SD636 (R,S)	Si Transistor	Motor drive
Q304		2SD641 (S,T)	Si Transistor	Motor drive

2-3. IRIS DRIVE BOARD

Symbol No.	⚠	Part No.	Parts Name	Remarks
Variable Resistor				
VR201		VR5-2880-103	CH V R	10 kΩ Manualiris
VR202		VR5-2890-473	CH V R	47 kΩ Manual iris
VR203		VR5-2890-203	CH V R	20 kΩ Auto iris set
Resistor				
R201		QRSA08J-472YL	CH MG R	4.7 kΩ 1/10W J
R202		QRSA08J-182YL	CH MG R	1.8 kΩ 1/10W J
R203		QRSA08J-272YL	CH MG R	2.7 kΩ 1/10W J
R204		QRSA08J-103YL	CH MG R	10 kΩ 1/10W J
R205		QRSA08J-822YL	CH MG R	8.2 kΩ 1/10W J
R207		QRSA08J-331YL	CH MG R	330 Ω 1/10W J
R209		QRSA08J-273YL	CH MG R	27 kΩ 1/10W J
R210		QRSA08J-332YL	CH MG R	3.3 kΩ 1/10W J
R212		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R213		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R214		QRSA08J-473YL	CH MG R	47 kΩ 1/10W J
R217		QRSA08J-223YL	CH MG R	22 kΩ 1/10W J
R218		QRSA08J-223YL	CH MG R	22 kΩ 1/10W J
Capacitor				
C201		QCF81HZ-154YLA	CH C Cap.	0.15 μF 50V Z
C202		QCF81HZ-103YLA	CH C Cap	0.01 μF 50V Z
Transistor				
Q201		2SC1623	Chip Transistor	
Q202		2SK198	Chip FET	
Q203		2SK198	Chip FET	
Q204		2SC1623	Chip Transistor	
IC				
IC201		NJM3414M	IC	OP Amp
Others				
SW201		WC3-0055-000	Slide switch	

1. STANDARD CIRCUIT DIAGRAMS

NOTES ON USING THESE CIRCUIT DIAGRAMS

1. The circuits and the circuit constants are subject to change for improvement without notice, because the circuit shown in this diagram is the standard one.
2. The values of voltages and the waveformes are mesured under the following conditions.
   AF switch: ON
3. The indications used in the circuit diagram have the following meanings.

(1) Resistors

10K:	Value of resistance
	No unit : (Ω)
	K : (KΩ)
	M : (MΩ)
	Permissible power rating (W)
No indication:	1/10W carbon resistance or chip resistance

(2) Electrolytic capacitors

47/16:	Capacitance (μF)/Withstanding voltage (V)
NP/BP:	Electrolytic capacitor without polarity
(T) or TAN:	Tantalum capacitor

(3) Capacitors

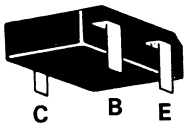
033:	Capacitance 1 or more (pF), less than 1 (μF)
100v:	DC withstanding voltage
	AC withstanding voltage in the case of AC indication
	No indication: 50V DC
MY:	Mylar capacitor
PP:	Polypropylene capacitor
	No indication: Ceramic capacitor

(4) Method of connection

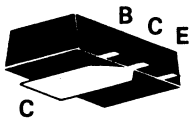
□	: Connector
△ or—>>—:	Chip connector
○	: Soldering

4. The wiring diagram should be used only for the sake of reference because it may be discrepant from the actual circuit due to improvements and other causes.

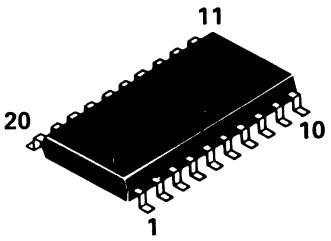
PIN ARRANGEMENTS OF ICs, TRANSISTORS AND DIODES



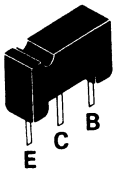
2SB624
2SA812
2SC1623
2SD596
2SK198



2SB798
2SD999



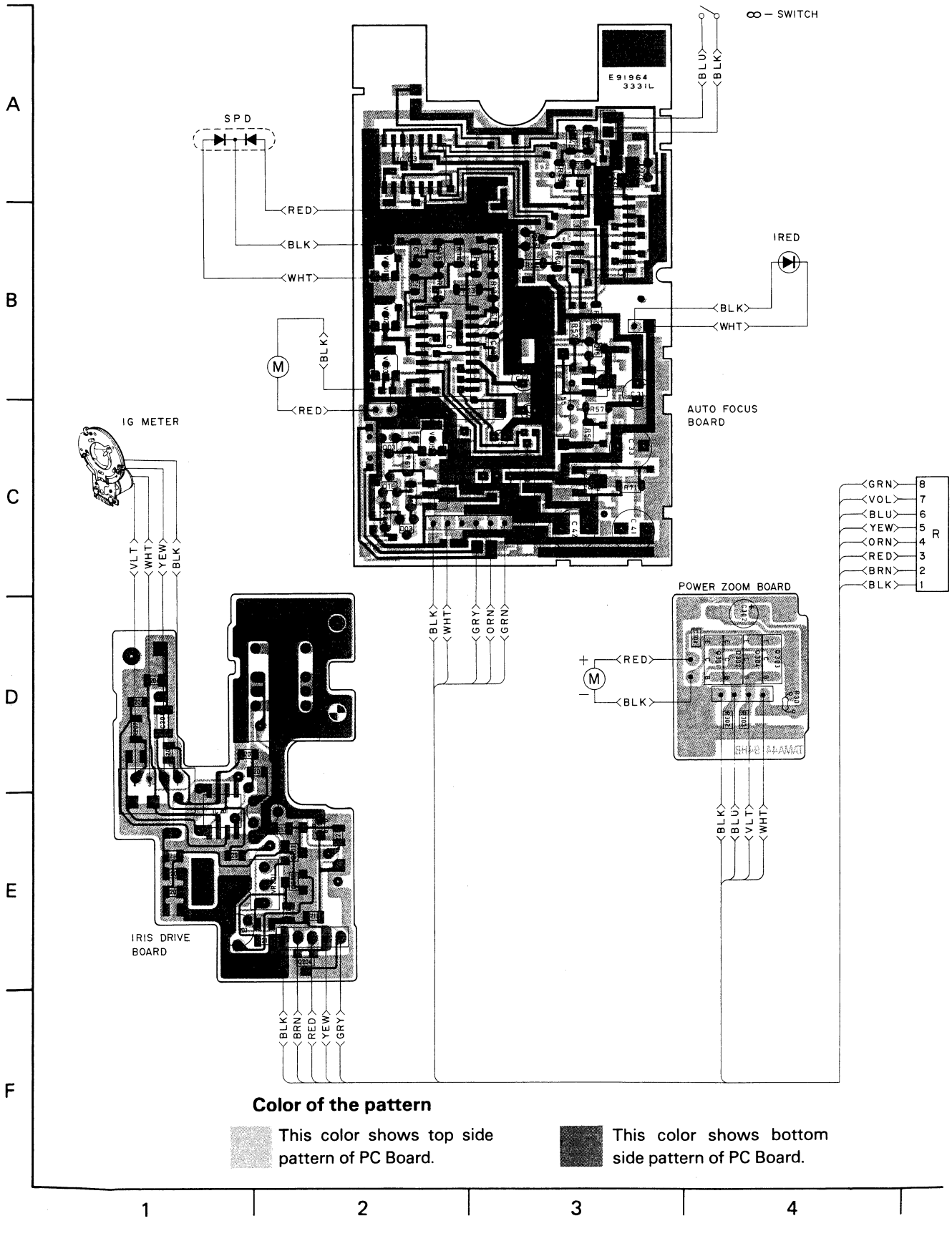
AN6993S (20 pin)
MN1453AXS (18 pin)
NJM2901M (14 pin)
NJM3414 (8 pin)



2SB641
2SD636

NJM78L05A

2. WIRING DIAGRAM

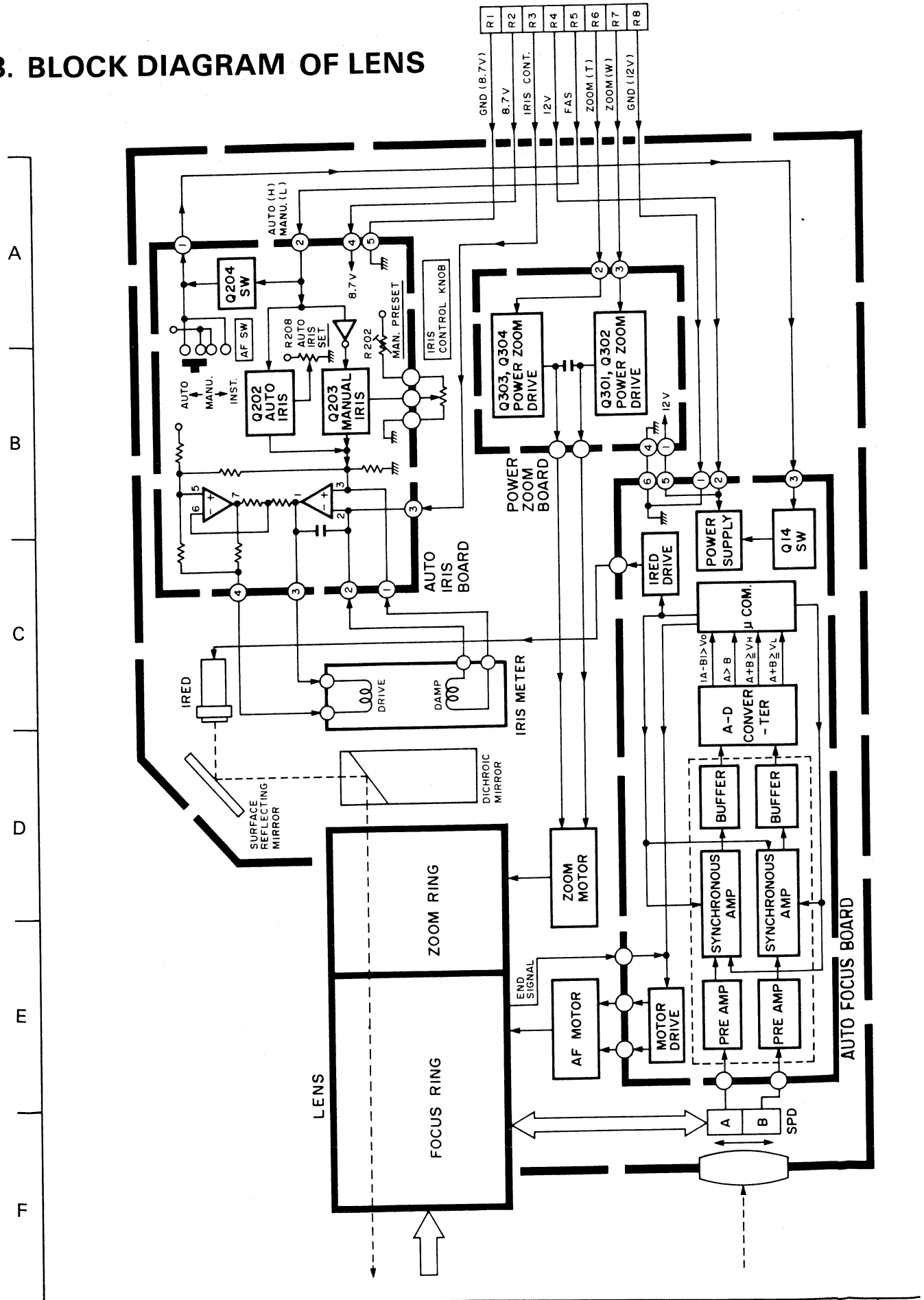


Color of the pattern

This color shows top side pattern of PC Board.

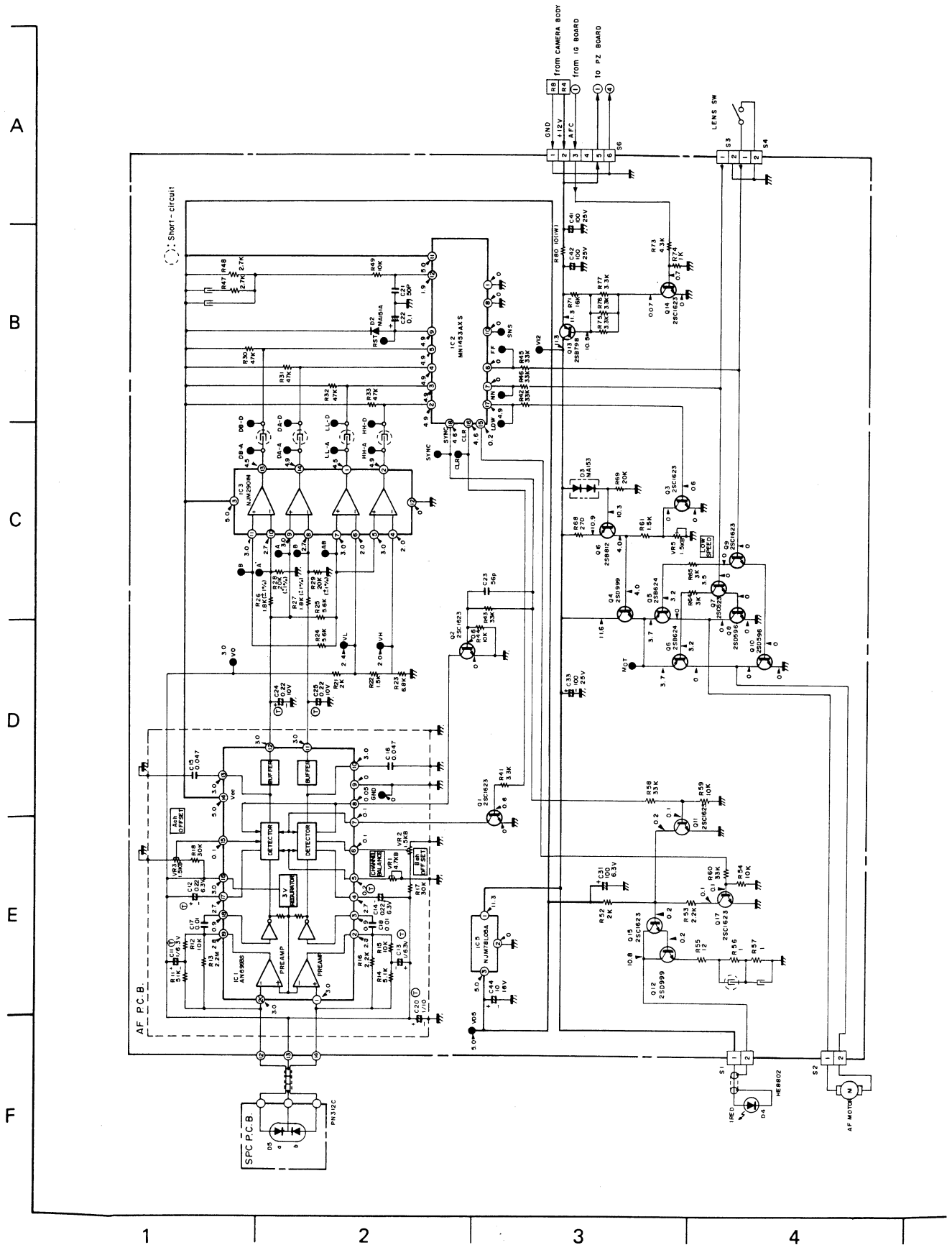
This color shows bottom side pattern of PC Board.

3. BLOCK DIAGRAM OF LENS

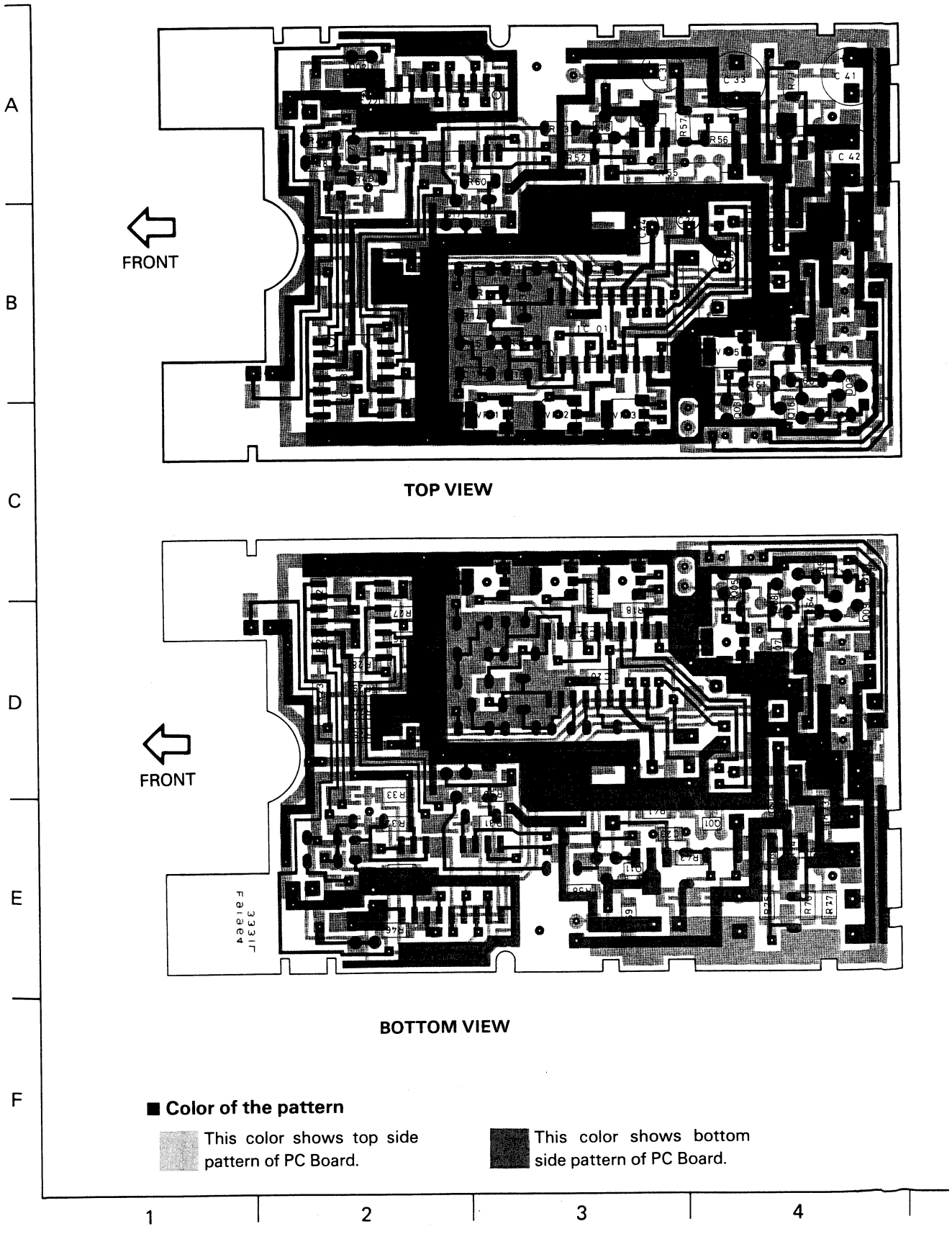


4. AUTO FOCUS BOARD

4-1. Circuit diagram



4-2. Board diagram



TOP VIEW

BOTTOM VIEW

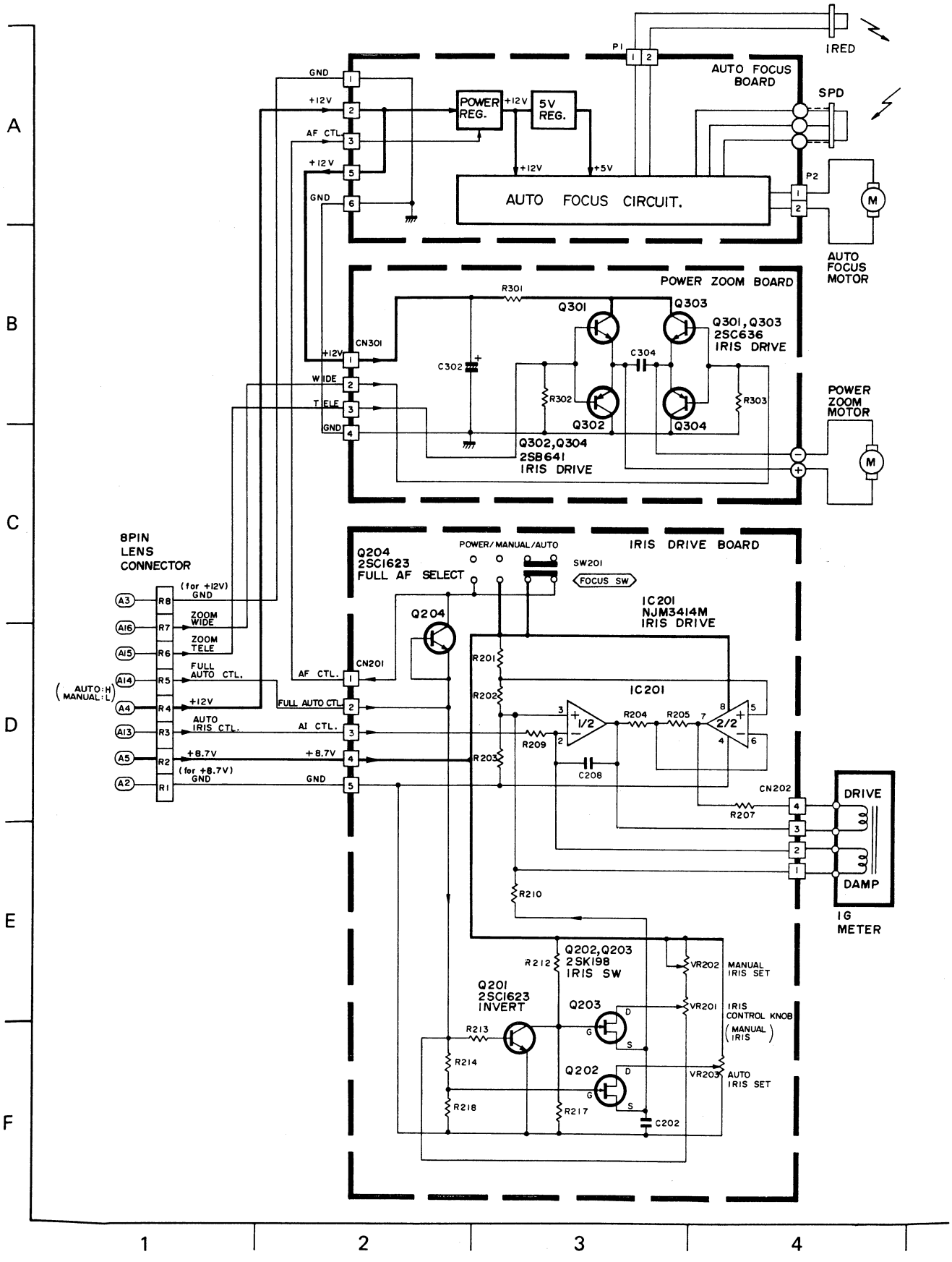
■ **Color of the pattern**

This color shows top side pattern of PC Board.

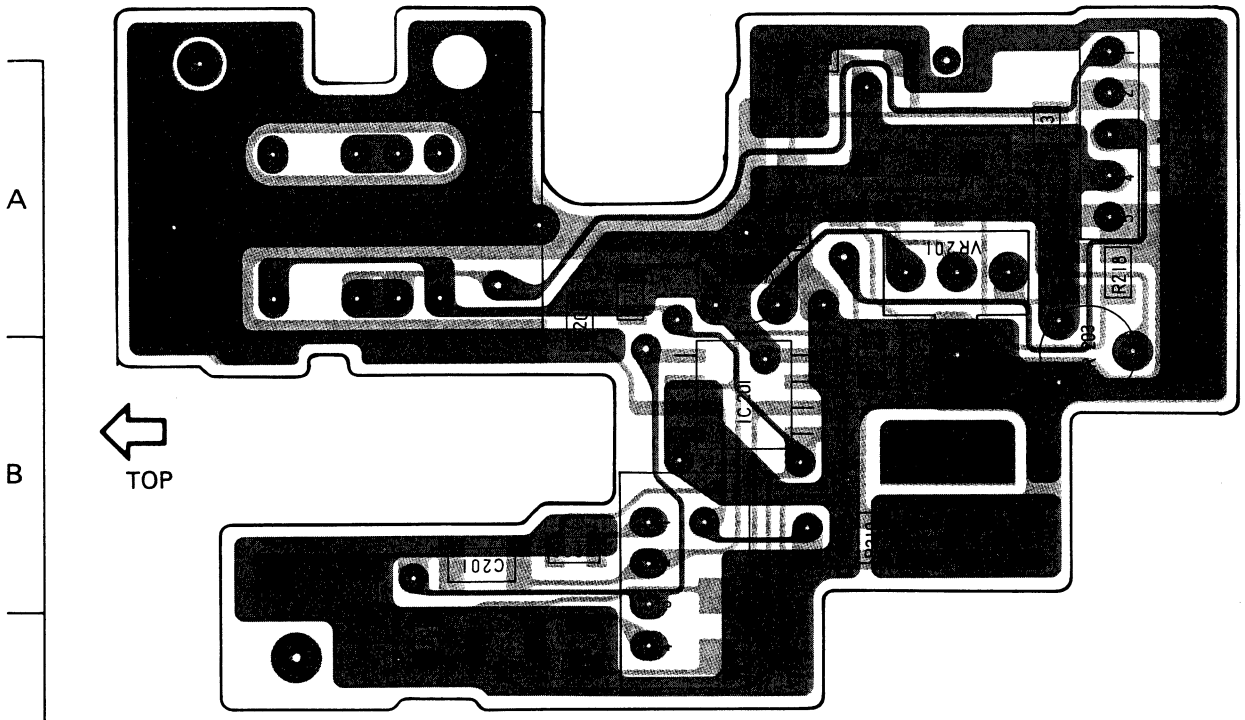
This color shows bottom side pattern of PC Board.

5. IRIS DRIVE BOARD/POWER ZOOM BOARD

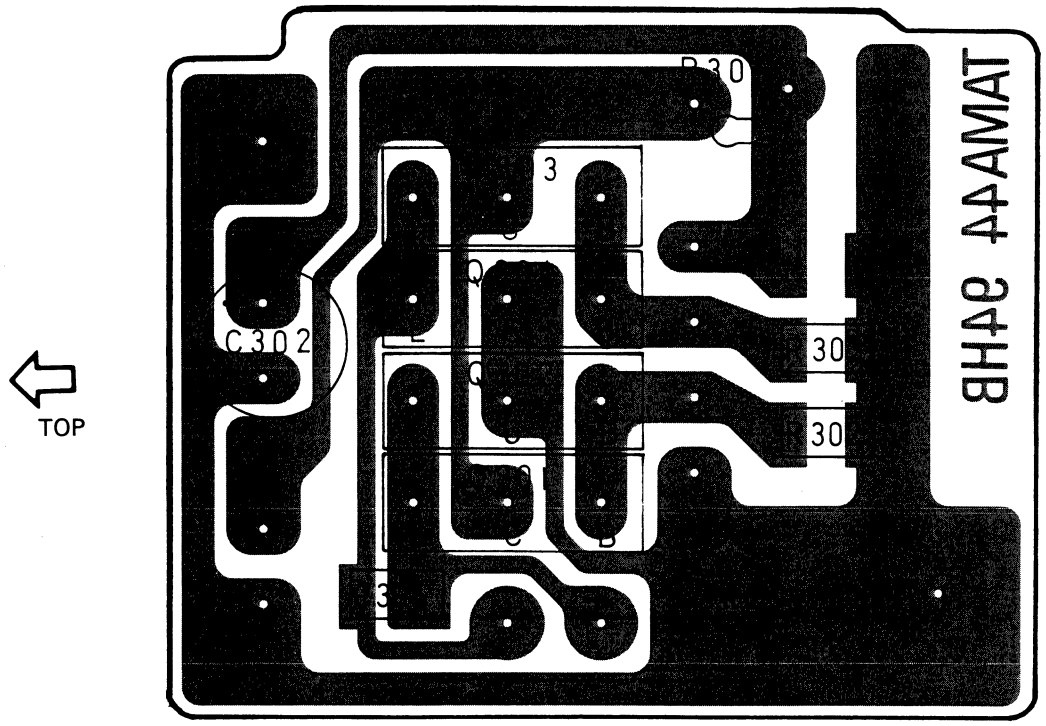
5-1. Circuit diagram



5-2. Board diagram of Iris drive board



5-3. Board diagram of Power zoom board



■ **Color of the pattern**

This color shows top side pattern of PC Board.

This color shows bottom side pattern of PC Board.

GX-N6 series LENS
CLK07206-A-B
SERVICE MANUAL

- This sevice manual contains instructions referring principally to the oparation check and replacement of parts of the lensunit of the color video camera GX-N6 series.
- For details about the camera unit of the GX-N6 series, serles, please reler to the respectivs service manuals.
- This service manual has many parts common to the GX-N8 series LENS SERVICE NANUAL. It is recommended, therefore, to use the two manuals together.

Contents

1. Removing Covers and Printed Circuit Board 35E
2. Removing the Focus Ring 35E
3. Removing Lens unit Iris unit and Zoom ring Ass'y 36E
Parts List 37E
Standard Circuit Diagram 38E

1. Specification

Refer to page 2 of the "GX-N8 Series Lens Service Manual"

2. Repair Classification, Precautions and Preparations for Service

Refr to page 2 to 4 of the "GX-N8 Series Lens Service Manual"
* Lens manufacturer: KOWA (GX-N6 seriese lens)

Repair

Refer to page 5 of the "GX-N8 Series Lens Service Manual", but for "Color Engraving" follo Fig. 1.

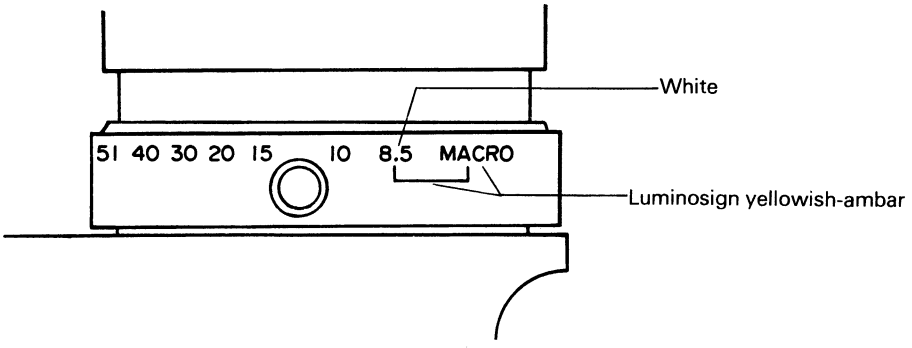


Fig. 1

1. Removing Covers and Printed Circuit Board

(1) Remove serew Ⓐ and pull the lower part of the side cover towards you and pull it out downward. To mount it set the BLC switch and BLC switch and BLC knob to the lower side, match the part marked with * on the top cover and side cover and side cover, insert the protruding part of the BLC switch in the BLC knob hole, and tighten screw Ⓐ.

(2) On the bottom cover, remove three screw Ⓑ Bushing clamp, and two screw Ⓒ Remove the bottom cover while releasing the connector lead wire from the notched part of the bottom cover.

Note:
Be careful not to catch the lead wire when mounting the bottom cover.

(3) Remove three screws Ⓓ and remove the top cover by pulling it upward.

(4) Remove two screws Ⓔ and the ins drive board.

Note:
Refer to the wirning diagram for connection of the lead wires.

2. Removing the Focus Ring

(1) Remove rubber ring from lens body. (When difficult to remove, a pointed object such as a toothpick may be useful.)

(2) Peel off cellotape and remove sheet.

(3) Remove three screws Ⓖ and also remove three Focus chips, and remove focus ring from the lens.
(Regarding screw lock, removal should be possible without using solvent, but if difficult to remove, applying a small amount of thinner to the screw may ease removal.)

Note 1:
When installing, align the indicator line on the indexring with the "∞" mark on the focus ring, insert the focus chips, fasten with screws Ⓖ and apply screw lock.

Note 2:
After removing and replacing the rubber ring, sheet, and focus ring, confirm the "Focus operation check items". Refer to page 4 of the "GX-N8 Series Lens Service Manual".

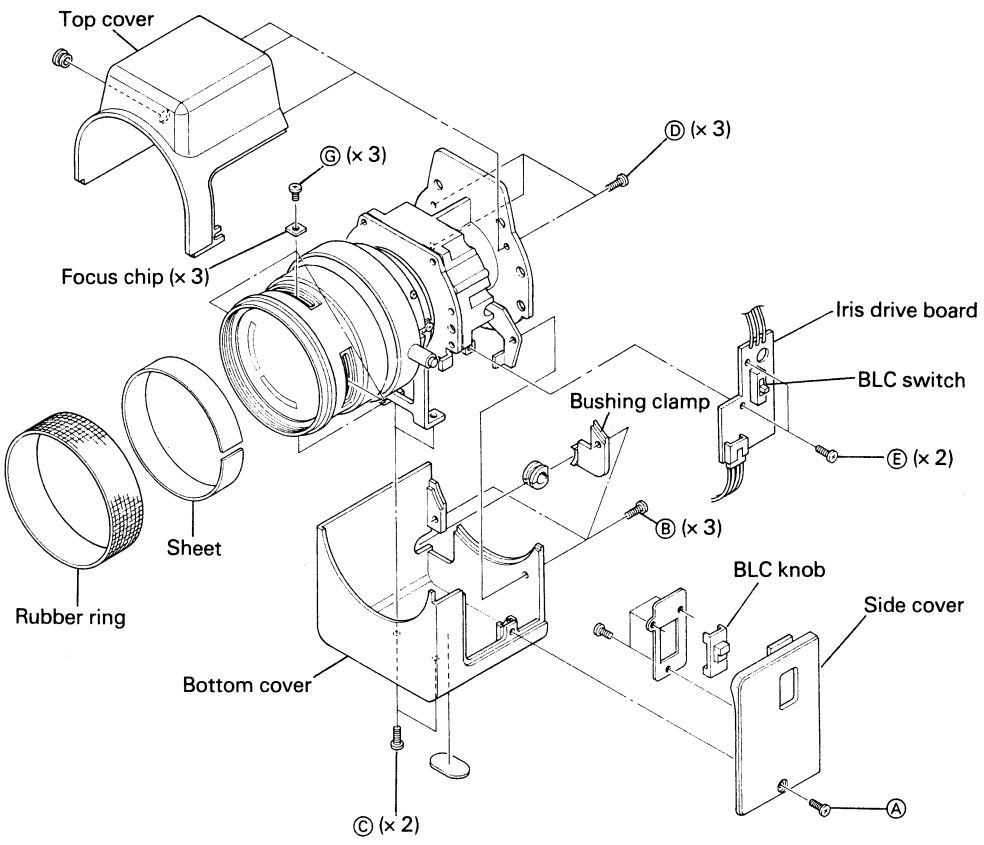


Fig. 2

3. Removing Lens unit Iris unit and Zoom ring Ass'y

(1) Remove covers (Refer to "Removing Covers and Printed Circuit Board").
(2) Remove five screws Ⓐ and the lens unit from the chassis unit.
(3) Remove three screws Ⓑ and iris unit.

Note:
After removing and replacing the iris unit, confirm the "Auto iris check items". (Refer to page ..... of the "GX-N8 Series Lens Service Manual".)

(4) Remove four screws Ⓒ and mount.
(5) Remove three screws Ⓓ (3K 1.7 × 4) and screw Ⓔ (3K 1.7 × 4/Ni) to take out the lens unit from the zoom lens base.
(6) Remove three screws Ⓕ to take out the zoom ring. In this time, remenber the location of the zoom ring and the lens unit.

Note:
As the macro knob can be easily removed, be careful not loose it.

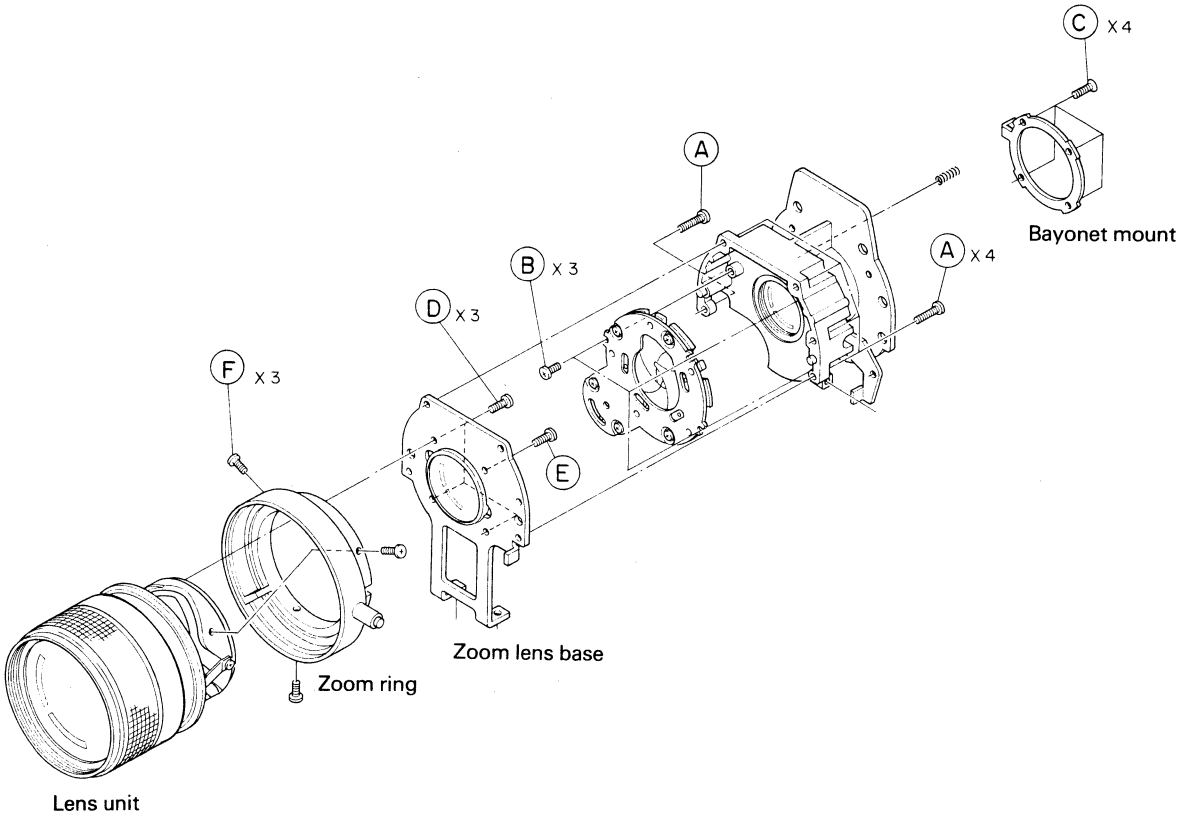


Fig. 3

Adjustment

With regard to adjustment, please refer to page 13 "Adjustment" of the "GX-N8 Series Lens Service Manual". Furthermore, the adjustments of concern are only "2. Back Focus Adjustment" and "4. Auto Iris Adjustment".

Parts List

1. System Assembly Replacement Parts List

1-1 Exploded view

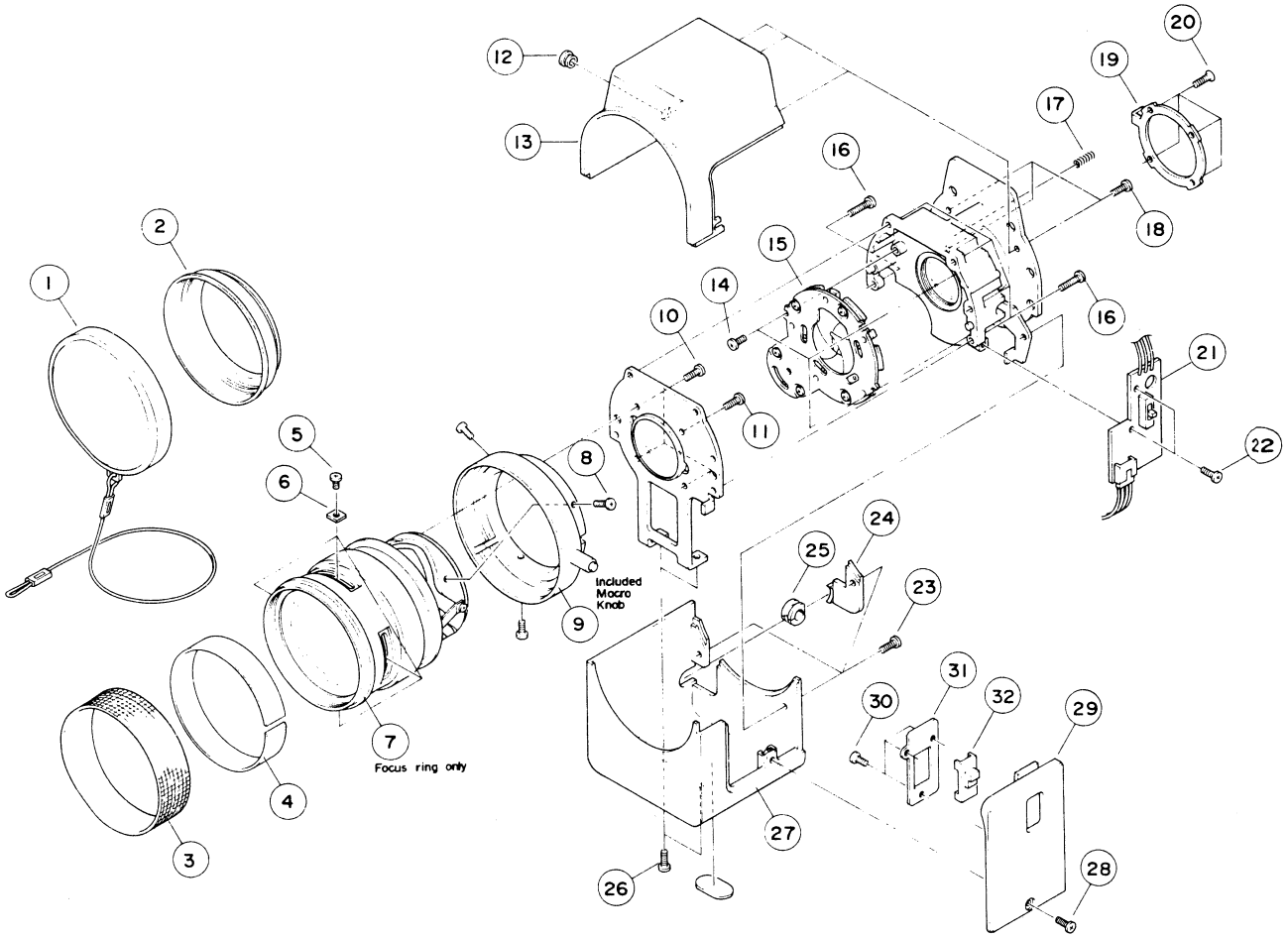


Fig.4

1-2 Parts lest

SYMBOL No.	⚠	PART NO.	PART NAME	REMARKS	SYMBOL No.	⚠	PART NO.	PART NAME	RENARKS
1		CM42957-00A	Lens cap Ass'y		17		LMZ-76-42	Spring	
2		DA7-0692-002	Lens hood		18		BTIK 2 × 5	Screw	× 3
3		LMZ-76-4	Rubber ring		19		LMZ-76-40	Bayonet mount	
4		LMZ-76-289	Sheet		20		BTIL 2 × 5	Screw	× 4
5		IL 1.7 × 3	Screw	× 3	21		LMZ-76-6740	Iris drive board	
6		LMZ-76-3	Focus chip	× 3	22		BT3K 2 × 5	Screw	× 2
7		LMZ-76-1	Focus ring	Focus ring only	23		6K 1.7 × 3	Screw	× 3
8		3K 1.7 × 4	Screw	× 3	24		LMZ-76-286	Bushing clamp	
9		LMZ-76-22/26	Zoom ring unit	Included Macro Knob	25		LMZ-76-287	Bushing	
10		3K 1.7 × 4	Screw	× 3	26		3K 1.7 × 4	Screw	× 2
11		3K 1.7 × 4/Ni	Screw		27		LMZ-76-282	Bottom cover	
12		LMZ-76-283	Cap		28		1K 2 × 4	Screw	
13		LMZ-76-281	Top cover		29		LMZ-76-261	Side cover	
14		BTIK 1.7 × 3.5	Screw	× 3	30		BTIK 1.7 × 3.5	Screw	× 3
15		LMZ-76-34	Iris unit		31		LMZ-76-263	BLC knob clamp	
16		3K 1.7 × 6	Screw	× 5	32		LMZ-76-262	BLC knob	

STANDARD CIRCUIT DIAGRAMS

1. IRIS DRIVE BOARD

1-1. Circuit diagram

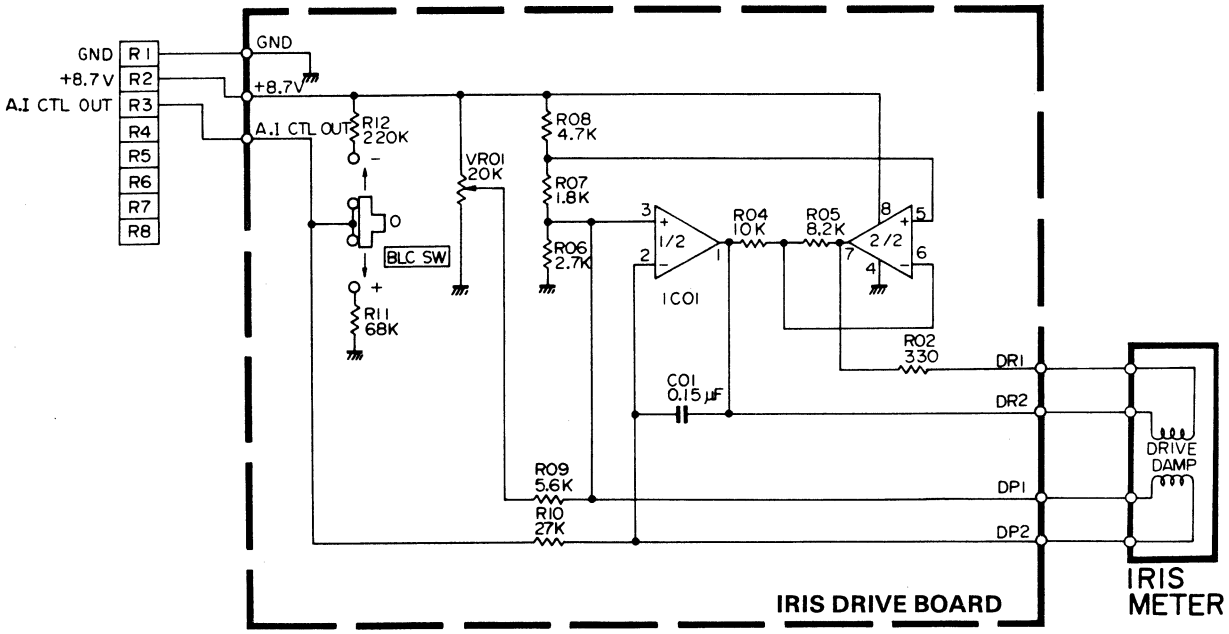


Fig. 5

1-2. Board diagram

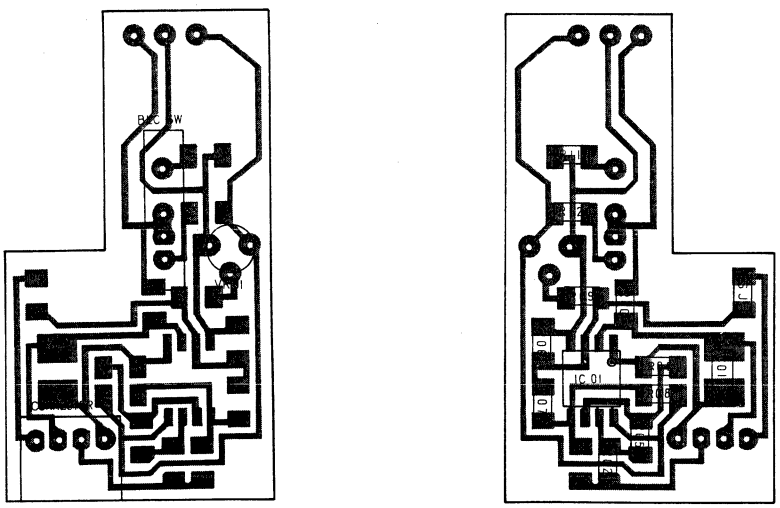


Fig. 6

1-3. Parts List

Symbol No.	⚠	Part No.	Parts Name	Remarks
Variable Resistor				
VR01		EVM-L3G	VR	20kΩ
Resistor				
VR02		QRS148J-331YL	CH MG R	330Ω, 1/8W, J
VR04		QRS148J-103YL	CH MG R	10kΩ, 1/8W, J
VR05		QRS148J-822YL	CH MG R	8.2kΩ, 1/8W, J
VR06		QRS148J-272YL	CH MG R	2.7kΩ, 1/8W, J
VR07		QRS148J-182YL	CH MG R	1.8kΩ, 1/8W, J
VR08		QRS148J-472YL	CH MG R	4.7kΩ, 1/8W, J
VR09		QRS148J-562YL	CH MG R	5.6kΩ, 1/8W, J
VR10		QRS148J-273YL	CH MG R	27kΩ, 1/8W, J
VR11		QRS148J-683YL	CH MG R	68kΩ, 1/8W, J
VR12		QRS148J-224YL	CH MG R	220kΩ, 1/8W, J
Capacitor				
C01		QCF81HZ-154YLA	CH C Cap.	0.15μF, 50V Z
IC				
IC01		NJM3414M	IC	OP AMP
Others				
SW01		QSS1A13-C01	Slide Switch	

Printed in Japan
8504 G
J.K